The Builder.

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Water Supply from the Chalk.

A GREAT deal has been said during the last few weeks concerning the London County Council's scheme to fetch water for the metropolis from Wales, and the inhabitants of that portion of the Principality chiefly affected by the scheme have become seriously alarmed, and will undoubtedly offer the most strenuous resistance to the annexation of even a single acre of their "water rights." The Monmouthshire County Council is extremely sore at the proposal to tap the upper sources of the Wye, and all the large centres of population in South Wales are in a state of unrest. Cardiff has secured an abundant supply from the Taff Vawr reservoirs, in Breconshire, and is extending the works. Swansea has gone to the same county and has tapped an important water area in close proximity to that portion of the Usk watershed coveted by the metropolis. Birmingham's already acquired site, drained by the river Elan, and one or two other rivers, is closely hemmed in by the London County Council's scheme. All these cities will have much to say, no doubt, to any attempt at preventing them from ever extending their water areas as occasion may require. The Carmarthen County Council will centre its opposition in the proposed appropriation of the upper waters of the Towy. So that, if the London scheme is really carried into effect, the attendant legal and Parliamentary expenses will not be the least item of cost. Everybody knows what a trouble Birmingham had to secure its foothold in Central Wales, and that even when a modest seventy square miles only were to be laid under contribution, instead of 488 square miles for which London is now seeking. Of course, there will always be opposition from public bodies in such cases—there always has been. And it may be argued that, inasmuch as certain cities have succeeded in spite of the opposition, London will probably succeed also. We hope that may be so, if the London scheme is to be proceeded with; but the case is stronger against the metropolis than was against Birmingham, from a Welsh standpoint. Birmingham's area is well to the north of the populous centres of South Wales, and there was plenty of good gathering ground between that area and the populous centres referred to. We allude to the gathering grounds of the Towy and Yrfon and the upper part of the Usk valley; but these are the very sites proposed to be captured by the metropolis, and which are estimated to yield 317 million gallons daily, or more than three-fourths of the quantity proposed to be dealt with by the London County Council in Wales. The opposition of Welsh authorities has, therefore, much more backbone in it than it has ever yet had. Of course, they cannot see the only convenient water-areas for them stolen under their very eyes, without raising the strongest opposition possible.

Under these circumstances, may we ask if it is yet too late to make further inquiry into the capability of other sources of supply nearer home? Have we yet found out, for instance, all that is possible concerning the capability of the chalk as a source of supply? A great deal has been written from time to time on the subject, and the aggregate literature would make a small library. But what does it all amount to from a practical standpoint? That may be fairly well gauged by the nature of the evidence given at different Royal Commissions. Summarised, that may be stated as consisting of a series of disjointed observations, of very unequal value, approximately complete for certain very restricted spots, but sadly incomplete as a whole. Commissioners must have always felt that the evidence put before them on this matter has not been such as to enable them to arrive at any definite conclusions, except in a very general way. It is a subject demanding the closest attention, and is not to be worked out by a single individual. Neither must it be approached in a partisan spirit, as has been so frequently the case in the past. It must not be left to well-meaning old gentlemen perambulating the country, as a sort of hobby; nor to spasmodic inquiries, of the fireworks order, carried out in connexion with the promotion of, or opposition to, any Bill in the House; nor to men who get their living as "expert witnesses," and who may have too many irons in the fire and too many interests to consult. The work can only be carried out by a properly organised survey, and under Government control, and such a survey would be worth more than a dozen Royal Commissions, and much cheaper. We say "Government control" because any municipal body, such as the London County Council, is not sufficiently independent to do the work, and, in the case under review, the Council has already committed itself to a policy practically inimical to obtaining anything like an universal supply from the chalk, though it would possibly not admit that.

In short, we want more information on the matter before we can appraise the true value of the chalk as a water-bearing formation; and we can see no better way of obtaining that information than by having it collected by a Government survey, empowered to enter on private lands to make research, to take water levels in wells, and gauge the flow of streams and rivers, and, in connexion with the geological survey, to state the sources of the waters, so far as that can be ascertained. This new water survey should have competent chemists and bacteriologists attached to the staff, as well as geologists and engineers, and its work should extend over the whole of the United Kingdom, special attention being at first paid to urgent cases, such as the London water supply problem. The sooner this Survey is established, the better. We have had enough of municipal political bantering, in which every Councillor regards himself as a Heaven-born authority on water-supply matters, and where the faddist reigns supreme. We are not now talking of the control of the supply, which is a totally different matter, and may be left severely alone on the present occasion.

If any one doubts the advisability of having this matter sifted by Government instrumentality, let him do as the writer of this article has done. Let him endeavour in a private capacity to obtain entrance to private grounds in which wells are situated, by writing beforehand for permission, or by bearing proper introductions (and these partly of an official, though not of a compulsory, character); let him approach Bumbledom for public materials concerning the town's water supply; let him possess the most suave manner possible, the patience of Job, and one of the sweetest tempers in the world; and, if he is not then converted, he will be

obstinate indeed. He will find that in the majority of cases permission to visit and examine is most freely given, and he may, perhaps, be directly assisted in his work; even Bumble will receive him with open arms until Bumble is asked to do even the smallest amount of work for nothing. Give plenty of time to the work, and peg away at bad correspondents. Then plot your results on a large-scale map, and you will find that you have only got a small amount of evidence together; that over many square miles you have no information whatever and cannot get any.

Now, this missing evidence would not matter very much with any ordinary porous formation, but the chalk is not an ordinary formation, and has to be specially considered. On most hydrogeological maps it is marked as being "porous," but as a matter of fact it is not so. If any doubt be entertained on this head (after so many unqualified assertions to the contrary) let the reader take a block of chalk, cut it out in the shape of a basin or bucket, and fill the receptacle with water. After waiting for some considerable time it will be found that here and there a little globule of water will have formed on the outside. When the chalk sides have become saturated, however, these globules will form very much more slowly, and the bucket may be left for days without the water entirely disappearing, and then some of it must go by evaporation. Of course, some kinds of chalk are rather more open than others, and no rock (not even stiff clay) is actually impervious. At the same time, if those who sink wells in the chalk had to rely on what water has actually penetrated the body of that substance it would be an exceedingly bad outlook for them. It is safer, and much nearer the truth, to regard the chalk itself as impervious, from a practical standpoint, and to allow its water-giving capabilities to consist of the open joints running through it. Now, just a word or two about these joints and their distribution, for they are the controlling factors in the case.

To begin with, they are not so capriciously distributed as some would have us believe. There is a kind of method, rough and ready, we admit, but still a kind of method. These joints have been formed in several ways, of which the principal are the following:—The bulk of them, particularly the master joints, have been formed by the contraction of the material in bulk as it became formed under the sea, and on elevation afterwards. The chalk is, in maximum, about 800 ft. in thickness; under and near London (depending largely on denudation), however, it may not be more than 500 ft. to 600 ft. The whole of this was laid down in the sea during Cretaceous times, and some of the contraction alluded to was brought about, in the lower parts of the formation, by the weight of the superincumbent portion of the same formation. Nevertheless, the contraction which made most of these joints and cracks was that induced by these marine beds as they were brought above sea-level by bradyseismical elevation. A few more were, no doubt, made by violent earth movements in later times. Chemical change from within, whereby much of the carbonate of lime (of which the bulk of chalk is chemically composed) has been removed, and a species of marl left behind, has modified the "porosity," filled up some of the minor cracks, and led to the establishment of others.

Thus a complete network of small joints and cracks has been produced. If these joints were always large, and if they always communicated with each other, all would be well, and we should not have need of so much purely local information concerning them—for water supply from the chalk largely consists of that. But the joints do not fulfil either of these conditions. Moreover, a great element of uncertainty has been introduced by the local enlargement of joints underground until the fissures thus made are veritable caves, some of them several feet in height and a mile or two in length. These can only be regarded as undergound reservoirs, and the fortunate district possessing them has something to boast of from a water-supply standpoint. Billions of gallons are there, fed by the tricklings down through the smaller joints and cracks from the surface. If we could only locate several of these water-filled "caverns," and be able to note rise and fall of the surface of water in them, the chalk water-supply question would be largely solved. Failing that, we can only observe the rise and fall of the levels in wells, and that, though a bad substitute, is useful enough if the work could be carried out on a systematic plan.

We cannot, however, speak of the chalk as a homogeneous formation. It consists of at least three fairly distinct lithological parts. The upper is a soft limestone, marly in places, permeated by fissures in all directions, not necessarily communicating with each other except on a small scale and locally. The middle portion of the chalk is, locally, a hard rock, containing but few fissures and is a bad water producer. The lower portion is rather better, but still nothing like as good as the upper; it contains fewer fissures, joints, or cracks, and these are chiefly of a "blind" character. Indeed, the lower chalk is often alluded to as though it (and its joints) were entirely impervious, and as though the hydraulic properties of the upper chalk were due to the non-porosity of the lower chalk. That is right enough, locally, but cannot possibly hold good over wide areas. For, as any one who has followed the water-supply question knows, a great deal of the water in the Upper Greensand comes through fissures through the lower chalk. However, we cannot regard the lower chalk as such good water-bearing strata as the upper chalk, and those who have calculated the amount of water in the chalk formation as a whole, as though it were homogeneous from a water-supply standpoint, must be grievously in error. The usual method with many people has been to take the chalk *en bloc*, calculate its cubic contents, and then, after making certain allowances (mostly born and bred in their own minds), to say that the chalk contains so much water. So long as nothing serious was intended, this did not matter, but we cannot put up with such rubbish in dealing scientifically with the question. Nearly one-half of the chalk formation consists of this lower chalk, with few fissures, and not conspicuously water-bearing, except as a rarity. If the chalk be taken as, say, 650 ft. thick, then the lower part, about 300 ft. of this, cannot contain much water as a rule. The official geological map, made to show the distribution of fossils more particularly, is not much of an aid to us in distinguishing the fissured from the practically non-fissured part of the formation—it does not pretend to be hydrogeological. Any one who takes such a map, ascertains that the chalk has an outcrop of so many square miles, and by a mathematical process endeavours to find out how much water the chalk holds (as very many "experts" have done), must be extremely wide of the mark.

However, the chalk, at any rate the upper part of the formation, is a good water-bearer, as we shall see. For practical purposes the chalk may be divided into separate geographical areas, the idea being to allow these areas to coincide with underground drainage areas of the formation. There is considerable difficulty in doing that, and it has not been seriously attempted. It is obvious, however, that until that can be satisfactorily done, nobody is able to give more than the barest approximation of the value of the formation for water-supply purposes. In general, it may be noted that one great area is in Hertfordshire and is already drawn upon to a very considerable extent, and indications are not wanting that, although the water capabilities there are by no means exhausted, they are suffering. In short, the chalk in that district is already captured, and the supply is already being delivered to the metropolis. The next large area to which we may draw attention is the western half of Essex and adjacent part of Middlesex. The chalk is there covered over by Tertiary deposits, but is easily reached by well-boring. The underground drainage is towards the south, and the supply of water extremely abundant; much of this to-day runs to waste, but several wells for the public supply already draw upon it, and others are in course of construction. No reliable data are available as to the actual quantity, experts differing considerably on the point. But all are agreed that in this part of Essex there is a very large body of good water underground in the chalk, which is very little drawn upon. A third area is underneath the metropolis itself, but this already supplies hundreds of private wells and may be disregarded from a public-supply standpoint. As an instance that the water-yielding capacity of the chalk has almost reached its limits, some writers have quoted the circumstance that the water level in that formation under London is much lower than it was fifty years ago. They rightly charge this decrease in level to the consumption by private wells. It should be remembered, however, that that exhaustion applies only to a very restricted area of a few square miles, and does not in any way refer to the great mass of chalk some hundreds of square miles in area to the west of the metropolis, and which is, to this day, super-charged with water. A fourth district, somewhat difficult to define on account of almost total want of knowledge concerning the drainage underground, is in West Herts and South Bucks. It is certain that in this area there is a great quantity of water available for public purposes, for it is only drawn upon to a very limited extent. A fifth district adjoins the fourth and is in South Berks. This has long been regarded as a probable source of metropolitan water supply and is a rich one, but already drawn upon by several public bodies, in a small way. A sixth is continuous with the fifth, in North-eastern Wilts, and is, practically, virgin ground full of water. A

seventh may be defined as "underground chalk," covered by Tertiary deposits on the borders of Berks and Hants. An eighth is a narrow outcrop having a maximum breadth of 8 miles or thereabouts, stretching eastwards from Guildford to the neighbourhood of Croydon. This is an excellent water district, but is practically captured, Croydon, Sutton, Epsom, and other growing and populous towns, deriving their supply entirely from it. At the same time there is plenty to spare in the southern part of this prolific area. A ninth district is to the east of Croydon and on to North Kent. The upper chalk is here full of water, especially in that portion covered by the Tertiary deposits in North-east Kent. It is from this area that the unimpeachable quality water of the Kent Company is derived, and, in spite of the enormous extraction, there appears to be little or no diminution in the water level—on the broad scale, at least. What may be called the tenth district is in Mid-Kent. The water-bearing capacity of the chalk there has never been seriously tested, and we are without much authentic information. Since the last Royal Commission, when the late Mr. Topley called attention to it, and suggested with others that it might be laid under contribution for the metropolis, the area has been more or less explored, but practically nothing has been published. All that is known about it is that there is plenty of water in the rock, and the bulk of it seems to be running to waste under the sea, just off North Kent. This area will have to be carefully considered, but the engineering difficulties in capturing any very large body of the water will not be slight. The eleventh district of our classification is in East Kent, where recent examination has proved that a very large quantity of the water of the chalk is running into the sea from the cliffs to the north of Dover, and elsewhere.

Now, in calculating the actual amount of water available, it is unnecessary to consider existing water rights, which are of a political and not of a scientific character. But it is very essential that certain local areas should be fenced off as ground occupied by towns, under which the water may be assumed to be contaminated, or at least to be of a suspicious nature.

In future articles, from time to time, we propose to study each of these districts separately, when these points will be discussed in detail.

NOTES.

Technical and Elementary Education.

WE are glad to see that Sir John Gorst has been emphasising the necessity of a good elementary education as the foundation of a system of technical education. In a speech this week he gave some instances of the way in which an insufficient elementary education hinders the progress of technical education. The example was that certain students in chemistry, though they showed considerable general intelligence and much interest in the work, were hampered in it by their insufficient knowledge of arithmetic, so that they could not work out various results. This shows, in the plainest way, that the importance of elementary education is often overlooked in the discussions which continue to go on in regard to technical education. Any one who is acquainted with the state of education in Germany must appreciate even more every day that it is the sound general education of boys and youths which is at the foundation of German knowledge. To try to ingraft a system of technical or commercial education on a poor system of elementary education is very much the same thing as trying to place the walls of a building which are above ground on weak foundations. The one thing is about as foolish as the other.

The L.C.C. Works Department.

THE Works Department of the London County Council appears still to be in difficulties, though not to the extent some of its critics are suggesting; in fact, since the new management there has been great improvement in the working of the department, and the various losses which have to be reported were principally made under the old management. According to the report submitted to the Council on Tuesday by the Finance Committee, the total amount of cost above the fixed estimates prior to the new management was 50,239*l.*, but a saving of 9,373*l.* has been effected since, and, consequently, the total amount of cost above the fixed estimate, up to September of this year, has been 40,866*l.* The most serious loss has been incurred in the construction of the Lewisham sewer, the cost of which has exceeded the estimate by 22,924*l.*; 19,722*l.* of this loss was incurred previous to February, 1897, when the new manager was appointed, and the excess of 3,201*l.* since then is attributed to the period of the reorganisation of the work and rearrangement of the staff, while the remainder is practically accounted for by the extraordinary charges for establishment during the year 1897-98, which, owing to the small amount of work entrusted to the department, rose from 8 per cent. to 16½ per cent., or an addition to the cost of 1,991*l.* When the report is discussed by the Council no doubt the improvement which has taken place in the department will be made much of; but the fact remains that a total loss of over 40,000*l.* has so far been incurred.

The Institute Dinner.

THE annual dinner of the Institute of Architects, held this year at Birmingham, of which a detailed account will be found on another page, may be said to have been in every way successful, and justifies the policy of the Institute in occasionally holding these dinners at a provincial centre, as a means of drawing together the architects of London and the provinces, and emphasising the fact that the Institute is a national and not a merely metropolitan body. Of course, on such an occasion it is natural that the provincial and local members should predominate numerically, as comparatively few of the London members in large practice can find time to attend a dinner at some distance from London; but this fact is quite in keeping with the object of having the dinner occasionaliy in the provinces. While every one regretted the unavoidable absence of the President through illness, Mr. Florence, the senior Vice-President, may be congratulated on the admirable manner in which he occupied the chair and contributed very much to the success of the occasion; and Mr. Bidlake's old friends in London may compliment him on the evident popularity he has achieved in Birmingham, as evidenced by the warm reception he met with when called upon to respond to the toast of "Architecture and the Kindred Arts." Mr. J. T. Middlemore, a wealthy inhabitant of Birmingham who takes a great deal of interest in art, made a speech of considerable interest and which rose above the ordinary level of after-dinner speeches. The surroundings of the dinner we may observe, were better than they have generally been in London; few hotels can boast such a lofty, cheerful, and palatial-looking room for public dinners as that which has been attached to the Grand Hotel at Birmingham.

Professor Hayter Lewis.

BY the death of Professor Hayter Lewis the architectural world loses one who was a typical example of the old school of learned architects, who were as much scholars and students of architecture as architects. Professor Lewis carried out comparatively few buildings, but he had a remarkable knowledge of architectural style and history, and combined with this a high degree of general literary culture. He was a man of exceptional refinement of mind and of the greatest kindness and amiability of disposition; and the phrase, sometimes rather conventionally used, that he was beloved by all who knew him, is in regard to him no more than the simple truth.

Municipal Officers and Companies.

THE unsuccessful action brought against *London* by Sir J. Savory, at one time Lord Mayor of London, will, we hope, be a lesson to all those who try to play the double part of working in municipal offices and also taking an active in companies with which the Municipality has to do business. One does not, of course, impute anything in the nature of dishonesty to Sir J. Savory, but it is perfectly clear that a man cannot be at once the agent, so to say, of a Corporation and of a Company which has to make terms with this Corporation, whether it be for electric lighting or any other purpose. A mayor or an alderman or a member of a municipal committee is the agent of the general body of ratepayers, just as a director is the agent of the general body of shareholders. No man can serve two masters properly. Therefore the most severe criticism may be justly turned on the man who wishes to gain reputation by serving his fellow citizens, and to replenish his pocket by serving on the board of a Company which has dealings with the Corporation. We have purposely not gone into any of the facts of the recent trial, because it is the principle which it emphasises which is what we desire that our readers should note.

Railway Passenger Communication.

THE paper read last week by Mr. W. E. Langdon, the able electrician of the Midland Railway Company, to the Institution of Electrical Engineers, is interesting, as it follows so soon after the report of the Committee appointed by the Board of Trade to consider the best method of intercommunication in railway trains. It will be remembered that in their report the Committee condemned utterly the outside cord system, praised in general terms electric systems, and advised that the law should be extended so as to require an efficient means of intercommunication on all trains. They also stated that the electric communication should not entail the use of

additional couplings to those already existing. Now all the couplings except the brake coupling are unsuitable for the electric wires, and Mr. Langdon thinks that to use this coupling to carry the wires would be unwise, as it would lead to a divided responsibility between those who maintain the brakes and the electricians. The method devised by Mr. Langdon for the Midland Railway Company is excellent. There are four points in each carriage above the quarter lights where communication can be made. On pulling down any one of these, a disc on the outside of the carriage is shown and the bells in the guards'-vans and engine set ringing. It is very simple mechanically and electrically; one coupling only for the two wires forming the circuit is used, and judging from the specimen shown, it could hardly be simpler or more efficient. Its application to existing carriages would be easy, and its first cost and subsequent maintenance cheap. It is the most complete electric system yet proposed, and has the great advantage that the rolling stock of the different companies which adopt it could be coupled together without rearranging the electrical connexions.

The Northampton Institute.

A members' and students' conversazione was held at the Northampton Institute on the evening of the 9th inst. A feature of the evening was the delivery of what are called "lecturettes." That by Dr. R. M. Walmsley on "Wireless Telegraphy" was interesting, and was much appreciated by a large audience. The exhibits in the various class-rooms were well displayed, but owing to somewhat inefficient demonstration were not very highly appreciated. The engineering drawing-office is well illuminated by arc lamps, whose reflected rays from the ceiling give an ideal light, without shadows, to draw by. The architectural exhibits were meagre, and with the exception of one or two large photographs were of little account. The exhibits in the building trades' shops were poor, and this branch of the Institute does not seem to be too well patronised, though the engineering department appears successful. A feature was made of the artistic crafts, and these, though in their infancy, show some promise. An effort was made to enlist public interest by the modelling of a man's head in clay during the evening; but the model was obviously uncomfortable. The most trying feature of the evening was the unhealthy state of the atmosphere. We noticed this on a previous occasion; and it is quite time that the authorities took the matter in hand and instituted an efficient scheme of ventilation.

The General Post Office, St. Martin's-le-Grand.

It is announced that the authorities have resolved to pull down, and to re-build, the old Post Office, on the east side of St. Martin's-le-Grand. That structure, designed by Sir R. Smirke, R.A., was built in 1825-9; it has since been altered by the closing of its fine central hall, 80 ft. by about 60 ft., divided by Ionic columns into three aisles, and the addition of an attic story. It occupies the site (in part) of the collegiate church of St. Martin, and of 130 houses, standing in several courts and alleys, which had formed the old precincts of the Liberty and Sanctuary. The College is said to have been founded by Wihgtred, who was King of Kent in 694-725, and endowed in or about 1056 by Girard and his brother Ingelric, Earl of Essex. On clearing the ground for Smirke's building was destroyed the crypt of the church, as rebuilt by William of Wykeham, who was Dean of the College, and a great amount of Roman remains were discovered. The church tower and spire are drawn in A. Van Wyngaerde's view of London, *circa* 1550, now in the collection given by Mrs. Sutherland to the Bodleian Library. The parish of St. Leonard Foster is almost coterminous with the boundaries of the college and its precincts. In the Crace collection are views, by Girtin and Schnebbelie, of the crypt and the old houses.

Walls of Old Paris.

The "Vieux Paris" Committee has undertaken to start some excavations in the garden of the archbishop's palace, with a view of finding some remains of the wall of the ancient central portion of Paris, still called the "Cité," and it is hoped by this means to make out the entire configuration of the walls of the ancient Lutetia.

Widening of Lothbury.

At their meeting on November 17 last the Court of Common Council approved plans for making Lothbury 50 ft. wide on the south side, between Old Jewry and Prince's-street, at a cost of 42,000*l.*, the London County Council contributing 15,000*l.*; and for making a new street (Lloyd's-avenue) from Fenchurch-street to Crutched Friars. The widening of Lothbury will involve the removal of the corner of Bank-buildings. No. 5 has just been vacated by Messrs. Freshfield & Williams; No. 7 is at present occupied by the London and Provincial Bank; the scheme will destroy the homogeneity of Soane's design. Soane built Bank-buildings in Prince's-street in 1807-10, widening and straightening Prince's-street, which formerly turned eastwards and then northwards to opposite St. Margaret's Church, taking the recovered ground for his enlargement of the Bank of England. At that time (old) Bank-buildings were standing on the triangular space in front of the Royal Exchange. The Grocers' Company resisted the extension of Prince's-street through their garden, and obtained 20,000*l.* in compensation. We have examined in the Soane Museum, by the Curator's courtesy, several volumes of drawings relating to Soane's work on the spot in question; one set of plans is signed by him and entitled "The Five Houses in Prince's-street, called 'New Bank buildings,' erected 1807-10 upon ground recently bought by the Bank of England." There are also some sets of varying designs for the premises he built (on the same ground) for the Reduction of the National Debt Office, now No. 19, Old Jewry, in 1817-8. A distinctive feature of that office's interior is the large open space, on the ground floor, lighted by a drum and cupola standing upon four arches, which Soane describes as the "cenotaph and place for paying English and Irish tontines," and especially designed for Westmacott's seated statue of William Pitt, presented by the Bank directors to the National Debt Commissioners. A wooden model of the "cenotaph" is in his Museum. The plans of the original property are interesting; they show the sites of the Grocers' (old) Hall and garden, and the old Meeting House, Meeting House-court, and almshouses in Old Jewry. The almshouses, now quite forgotten, were founded with a bequest in 1551, by Dame Elizabeth Morys to the Armourers and Braziers Company of all her lands and tenements in St. Olave, Jewry, parish, under charitable trusts. Under an Act of 49 George III., the Governors and Company of the Bank of England bought from the Armourers for 10,000*l.* the Morys trust property—comprising the almshouses, then occupied by thirteen almspeople, three messuages, and the Meeting House, where are now No. 19, Old Jewry, and the open space in the rear of Bank-buildings. Meeting House-court was called in and before last century Windmill-court.

Exhibition of the Société Internationale.

At the exhibition of the "Société Internationale" at the Georges Petit Gallery, Paris, the works of foreign painters predominate, and among those which have attracted most attention are the various works exhibited by Mr. Brangwyn, which appear to have impressed French visitors with a sense of their power of character and colour. M. Emile Claus exhibits a "Brouillard du Matin" which recalls the landscapes of Claude Monet; M. Baertsoen exhibits a good Dutch landscape. Three works by Mr. John Alexander, "La Rose," "Le Miroir," "l'Attente," are specially worth notice, also a beautiful moonlight view at Bellisle-en-Mer, by Mr. Humphreys Johnston. Among the French exhibitors, M. Lucien Simon exhibits a *genre* painting of Breton figures; M. Duhem some good water-colours, and MM. Felix Bouchon, G. J. Rousseau, and Rochegrosse, are prominent. Among the sculpture work are some remarkable sketches in plaster and a bust in bronze by M. Rodin.

ROYAL ACADEMY STUDENTS' DESIGNS.

It is naturally our duty, in looking at the collected students' designs at the Royal Academy, to go through first to the end rooms where the architectural drawings are hung; but the result certainly does not indicate that the architectural department of Royal Academy teaching is in a very flourishing state. For the Travelling Studentship, with a very promising subject, "A Town Church," only two designs are submitted, to one of which, that by Mr. William Hawke, the Studentship has been awarded. It is a quasi-Romanesque design, with some points of novelty in the detail, but wants coherence in style—the treatment of the buttresses and pinnacles round the dome, for instance, has no affinity with the details of the lower portion; and both in plan and design the domed portion of the church ought to be more decisively marked out and separately treated. As it is, one has the impression only of a nave of which one portion has a dome over it and the other has not. The other design submitted has more coherence of style and treatment, but is not interesting. The 25*l.* prize for "A Set of Architectural Designs" has attracted only one candidate, Mr. J. Stevens Lee, who earns the prize, we must say rather easily, for a set of sketchy drawings of the west end of a church with an apsidal baptistry—good in style, but hardly a set to win an important prize with. In fact, the architectural prizes seem to be going begging. The silver medal, for measured drawings of the Hall of the Middle Temple, has attracted no competitors at all. Among the Lower School designs some are suggestive and original though slight; the 10*l.* prize is awarded to Mr. A. E. Corbett for a design for a country railway station, which has the merit at any rate of indicating in the exterior treatment the position of the booking-office. Among the other Lower School designs that

for a boat-house, numbered 151, is effective and suitable, and that for a gamekeeper's cottage, No. 147, has a good deal of character. The competition for the plan of a building (subject—"A Town Club House") has been gained by Mr. A. Campbell Martin; the plan, with a central entrance, is dignified in arrangement, but the writing-room should not have been next the street. The billiard-room on the upper floor would be very inadequately lighted without a top light, which may be intended but is not indicated. The design numbered 161 is in some respects better; the writing-room is at the back and well lighted; the side position of the entrance, however, is not so dignified for a first-class club as the central entrance, and the billiard-room does not appear, but may be intended to be on another floor than the two shown.

In the "Cartoon for a Draped Figure" competition (subject "Calliope") the prize goes to Mr. George Murray, for a fine and dignified figure, with which none of the others can be said to compete. In sculpture the principal competition is for a group (small scale) of Diana and Endymion, for which there are a good many competitors, and a higher general standard of merit than in any other class. The first prize is taken by Mr. Stanley Nicholson Babb, whose group has a fine decorative character, and indicates a study of French sculpture. In the second prize group, by Mr. A. Bertie Pegram, the figure of Endymion is propped half upright in an uncomfortable attitude, though the group composes well in line. The first prize group, we may observe, would be very well suited for execution in bronze or silver as a centre-piece, on its present scale. Mr. S. Nicholson Babb also has the prize for a "Bas-relief of figure and ornament," for which there are only two competitors; his design is an admirable piece of work. In the three models of figures from life the first prize is taken by Mr. Gilbert W. Bayes and the second by Mr. A. Bertie Pegram; the two are very equal in merit however; in both the nude figure of a man about to sheathe a sword is a very spirited and excellent piece of work.

The competition for a design for the decoration of a public building, one in which we always feel a special interest, is gained by Mr. George Murray. The subject is "Harvest." It is a composition in which figures pass from left to right across the picture; the colour is fine and rich, and the figures of the children and of the woman following them (the one selected for treatment as a full size cartoon) are very graceful and original. Perhaps the objection may be made that the line of the composition, partly owing to the introduction of the child group, is a little broken and irregular; in this respect the general design of No. 87* is more truly decorative, but the detail and colour are not so good. Some of the students have entirely missed the proper character of decorative painting; Nos. 90 and 94, for instance, are pictures, but not mural decoration.

The first Armitage prize, for a design in monochrome for a figure picture, has not been awarded, and the general merit of the designs is not equal to what we have seen in some former years; the second prize has been awarded to Mr. F. Cadogan Cooper. The subject is "Joseph Presenting his Father before Pharaoh." The Creswick prize for landscape (subject—"A Bridge over a Trout Stream") is awarded to Mr. F. Appleyard for a work which is quite the best of the set; the style is broad and there is a unity of effect in the picture; the weak points are the water and the bridge; and we may observe that in all of them the bridge is rather weakly treated; there is no feeling for the picturesque of stonework. No. 1 shows a broad effect of light; No. 4 is a pretty composition. In several of them we notice the usual defect, in youthful landscapes, of the rather crude and harsh tone of the greens in grass and foliage.

The silver medal for a perspective drawing in outline of a building (open to painters and sculptors only) has attracted no competitors. We do not see why sculptors should be invited to compete for this prize, unless it be in relation to the introduction of buildings in bas-reliefs; but students of painting, at all events, are wrong to neglect it. The faults of perspective in the treatment of buildings in pictures are so frequent as to show that more attention to this subject would be very desirable.

* Only the names of the prize-winners are given by the Academy.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

CONFERENCE AND DINNER AT BIRMINGHAM.

A JOINT meeting of the Royal Institute of British Architects and the Birmingham Architectural Association was held on Friday last week, at the rooms of the Royal Society of Artists, Birmingham. In the absence of the President of the Institute (Professor Aitchison) through illness, Mr. W. M. Fawcett, one of the Vice-Presidents, took the chair. The subject for discussion was "Building By-laws and their Administration." Mr. C. E. Bateman explained that the subject had been selected by the local Association because the Birmingham City Council was about to frame new building by-laws, and had promised to submit the draft to the Association. They hoped to have the assistance of the Royal Institute in considering these by-laws, and also in an effort to obtain greater uniformity in the by-laws of Birmingham and the surrounding districts, from the want of which a great deal of difficulty and annoyance arose.

The following paper on the subject, by Mr. W. Henman, was then read by the Secretary of the Institute (Mr. W. J. Locke):—

Before entering upon the subject of "Building By-Laws and their Administration," respecting which I have been requested to make a few remarks preliminary to the discussion which it is hoped may follow, permit me to express my satisfaction that the Institute has determined to hold such gatherings as this from time to time at the centre of one or other of the allied societies and to offer on behalf of the Birmingham Architectural Association a hearty welcome to all who have come to take part in this meeting.

It seems to me most appropriate that at these business meetings held in the provinces, subjects which principally affect the daily work and status of architects practising outside the Metropolitan area should receive consideration. Time at disposal would be too short for full discussion of subjects connected with the higher branches of our art, and is in fact barely sufficient to given even a general idea of the difficulties surrounding a subject such as I have to bring to your notice; but it may, I trust, be enough to indicate the widespread feeling that building by-laws and their administration throughout the country are in a most unsatisfactory condition. Unless members of our profession can bring united pressure to bear upon the responsible authorities, the evils under which we have so long suffered may extend and cause in the future still greater annoyance and irritation to architects as well as injury and loss to the public.

It will be understood from the foregoing that the Metropolis is purposely excluded from present consideration, the reason being that the Building Act applying thereto has recently been revised, and because it is administered by an experienced body of men, who, I believe, are generally architects or have had an architectural training, in addition to which there is power of appeal to the London County Council. I pronounce no opinion, therefore, either upon the new Metropolitan Building Act nor upon its administration, but desire to direct attention to the fact that in the provinces an entirely different state of affairs exists.

Under the Public Health Act of 1875 District Authorities are empowered to make by-laws and building regulations subject to the approval of the Local Government Board. Some latitude in a few special particulars to meet local requirements may be necessary and advisable; but when every District Authority is allowed to make all sorts of petty variations confusion results, and architects who have works to carry out in several perchance adjoining districts are often caused the greatest annoyance and inconvenience by having plans disapproved in one district which would be passed without question in another, and this frequently resulting from the interpretation different surveyors may put upon the same by-law or regulation. Some Local Authorities make regulations simply by resolution of the Board, which they do not even print or circulate, and endeavour to enforce observance thereof without having secured the approval of the Local Government Board.

It may, I hope, be taken for granted that architects as a body have not the slightest desire to evade or obstruct any by-law or even any regulation lawfully made with the object of securing safety and health, provided such by-law or regulation is uniformly and reasonably enforced. Most of the difficulties, annoyances, and petty irritations principally arise because those in authority too often lose sight of the one and only object for which building by-laws and regulations are necessary, viz., to secure safety and health to individuals and communities.

The so-called model by-laws of the Local Government Board were framed with that object doubtless, but they are confused in arrangement; they go too much into detail on matters of minor importance, and respecting which knowledge is yet imperfect, and omit reference to matters of structural importance, the neglect of which in some buildings may be a definite source of danger. Moreover, they are wrapped up in a vast amount of unnecessary legal jargon and excessive verbiage. On these, really far from model, by-laws those of District Authorities are framed, but each with numerous variations even in neighbouring districts; reference to any particular subject is rarely assisted by suitable headings, marginal notes, or index. Special Acts of Parliament, promoted by Local Authorities for entirely different purposes, frequently have slipped into them clauses which either extend or repeal portions of building by-laws previously in force, and it rarely happens that such provisions are properly set forth in the printed matter issued as the building by-laws of the district. All this is bad enough, but difficulties are increased by the uncertain methods of administration.

Apart from the larger cities, provincial District Surveyors are usually selected from a class of men trained to road surveying and sewer laying, with little knowledge of building construction and less of architectural propriety. Brought up in the offices of District Surveyors, they appear to imbibe the idea that architects are their natural enemies, and that their duty consists in devising means for wasting their time and causing them unnecessary trouble, quite regardless whether by so doing the safety or health of an individual may be secured

In populous districts the Surveyors are assisted by Building Inspectors with, as a rule, even less knowledge and discretion, so that instead of inspection and regulation, such as I take it the law intended, there is frequent dictation and undue interference.

One class of property for which well-devised building regulations are required—viz., dwellings for the working classes—are still erected in the most flimsy fashion by the jerry builder, who generally goes scot free, while architects who desire to build scientifically and well are continually harassed by unreasonable restrictions and requirements under cover of a questionable by-law. The reason for this is not far to seek. Too many members of District Councils are interested, directly or indirectly, in building operations; the Surveyor can serve such in many ways, and in turn obtains their support. Inspectors are but mortal, and generally underpaid; it is, therefore, not surprising that some of them come under the influence of the speculative builder. Little credit accrues to them by drawing attention to his irregularities, but *éclat* is gained when an architect is reported as having convened even the letter of a by-law or regulation. Strange to say, the architect has no redress whatever, the Surveyor has all pretext, for even if the committee is permitted to be approached, they generally support the action of their Surveyor, and the Local Government Board proclaim their inability to interfere. Resistance to unreasonable demands simply engenders greater exactions, so that, more often than not, architects give way simply for the sake of peace and quietness.

Another side of the question, particularly in large towns and cities, seriously affects every class of the community. Year by year District Authorities are grasping at greater powers of control, ostensibly for the public good. Local Acts are slipped through Parliament. By-laws and regulations are made, many of which seriously trench on the rights of property and of individuals, or by which the cost of building is seriously and unnecessarily enhanced. In order to counteract these evils, members of our profession must act together and strive to obtain the co-operation of building proprietors by letting it be known through the public Press that action is being taken, in the hope of regulating local authorities and their officials within reasonable limits. Pressure must also be brought to bear upon the Local Government Board so that building by-laws

may in all essentials be uniform, and that only such regulations may be sanctioned as are proved to be necessary to secure health and safety. In addition to which courts of appeal, easily accessible, should be constituted.

Although but indirectly connected with our subject, I take this opportunity for drawing attention to the employment of district surveyors in carrying out buildings of architectural character, such as infectious hospitals, baths, libraries, markets, and even town halls and council houses. Rarely have they received suitable training to fit them for undertaking such works, and in doing so architects are deprived of legitimate employment for which many of them have spent years of study and gained practical experience. Why district surveyors should be so anxious to undertake the carrying out of work additional to their ordinary duties may at first sight appear unaccountable, but I have had opportunities for watching the process, and seen the results.

As previously mentioned, surveyors often make themselves useful to members of their board; then, when a building is required, they suggest that an architect's fees may be saved by employing their salaried servant. This appears so plausible to the average district councillor that it is not surprising the surveyor is entrusted with the work. He then obtains the services of some architectural hack, who prepares the design. The work proceeds; Mr. Surveyor then suggests that, in consequence of the labour involved, he should receive extra remuneration, which generally takes the form of a rise in his salary, and often the "temporary" hack becomes a permanent addition to his staff; so that the ratepayers, instead of simply having to pay an architect the usual 5 per cent. on the cost of the work, are saddled with an annual charge, which in the aggregate largely exceeds the legitimate fees for the carrying out of the work. In addition to which it is a well known fact that the actual outlay on buildings carried out under the control of surveyors generally is far in excess of what it would be in the hands of a qualified architect, so that, not only do members of our profession suffer, but the public have to bear the excessive cost, and the buildings lack architectural character and usefulness.

In some districts surveyors are permitted to undertake private work. They prepare designs in the public offices with the assistance of their staff; necessarily those designs are passed without question, and I have even heard of difficulties being thrown in the way of building proprietors and architects evidently for the purpose of diverting work into the hands of the surveyor.

These are crying evils, which it is to be hoped the Institute will take up and exert itself to remedy; it is one way in which it may demonstrate its power for the good of the profession and benefit the public. Such useful action is, in my opinion, the best means to adopt for the extension of its influence and the increase of its membership throughout the country.

Mr. Nicoll said that in his personal experience the surveyors were not so very bad to deal with. The architect, if he went about it the right way, generally got his own way in the and.

Mr. W. Milburn said that in Sunderland they had a set of unsuitable by-laws, framed by the Corporation, and the architects got up an agitation, in which they obtained the assistance not only of the builders but of the leaders of the workmen's societies. The result was that they got the by-laws amended.

Mr. J Cotton condemned some of the by-laws enforced in country towns as tending to destroy the picturesque irregularity which was one of the charms of such places. He suggested that the local Association should call into consultation the architects from the surrounding districts. The late Birmingham Surveyor was one of the best men they could have had in such an office, and he had found no difficulty in the present surveyor's rulings when the matter was put to him in the right way. By-laws should vary to suit local conditions—as, for instance, those of stone districts—but in what was really one large town uniformity was desirable. For instance, they could do things in Handsworth which they were not allowed to do in Moseley.

Mr. P. Gordon Smith said that Birmingham having special powers under the Consolidation Act, the suburban districts could not exactly copy its by-laws. He thought, however, that it would be a very great advantage if all the local authorities in the neighbourhood would meet in Birmingham and form a committee to go into the whole subject, with the view of framing a code of by-laws. They might, perhaps, get the assistance of some one from the Local Government Board to point out to them what they could or could not do. He was sure that the representatives of such a conference would receive the utmost consideration from the Local Government Board. As to the "regulations" of which complaint had been made, a District Council could make what regulations it liked, but it could not enforce them. There was no penalty. As for the model by-laws, the Local Government Board could not compel the adoption of any one of them. These by-laws had stood the test of the courts very well, but if their phraseology were obscure, there was no objection to the Local Authority printing explanations or illustrations with them. As for the surveyors, he had found them excellent officers and very amenable to reason. In many of the large towns the surveyors were simply splendid men.

The Chairman said that it appeared to him that the Birmingham architects should take a leaf from the book of their Sunderland colleagues.

Mr. A. E. Sawday, Leicester, thought they need not be thin-skinned on this question. It was taken up in Leicester, with the result that a resolution of the Council was passed that for all work over a certain amount an outside architect should be engaged.

On the motion of the Chairman, the following resolution was unanimously adopted: "That the Institute is in sympathy with the action that is being taken by the Birmingham Architectural Association as to the framing and administration of by-laws in Birmingham and the surrounding district, and will be very pleased to assist the local society by advice or suggestion in their action."

During the afternoon several of the architects from London were shown over the new General Hospital, with the special object of inspecting the results of the mechanical ventilation system carried out by Mr. Key, under the supervision of Mr. Henman, the architect. The system has been fully described in our columns; we refer to it now to record our impression after a personal inspection. We had rather a prejudice against any system of ventilation with closed windows, but we must say that after going through the building and experiencing the result we think that, as far as the wards are concerned, it is a decided success. It should be observed here that the windows are not constructed so that they *cannot* be opened (a mistaken impression which was rather fostered by one of Mr. Henman's own papers on the subject); they can be opened if desired, but as a rule are not. The air is sucked in from windows in the basement (carefully selected so as to be out of the way of contaminated air) by a fan, passing first through a screen of strained jute fibre, kept automatically wetted every quarter of an hour; then between a series of upright steam-pipes, heated to the required temperature; then through the fan and into the basement tunnels (about 3 ft. wide and just high enough to stand upright in), of which there is an extent of about two miles in length. From there the vertical ducts lead to the rooms above. The heating capacity of the main congeries of steam-pipes can be diminished at once, if necessary from any sudden change of weather, by a system of hinged wooden covers which shut off a portion of them from the air. At the mouth of each of the vertical ducts before referred to is a separate steam radiator to give an extra warmth, which may be required for special rooms; the main congeries of radiators supplying the average heat, the separate radiators supplying the slight variations required for different departments. The successful obstruction of dirt from the incoming air was proved by the state of the outside of the jute screen, which blackened the hands at once; as a member of the party observed, "it was filtering all the solid good out of the Birmingham air." In the wards, and in all the other rooms, the air is admitted at the window boards, behind a vertical glass screen about 18 inches high, to screen off direct draught and direct the air upwards towards the ceiling; it is finally extracted near the floor, to ensure circulation. The purity of air in the surgical ward inspected was certainly remarkable; and the principal nurse, who had been there for nearly a year, informed us that there was not the slightest uncomfortable result from the forced air system, and (what was more important) that she had never been in a ward in which any smell that arose was so quickly carried away; it seemed to be all gone in five minutes. That, of course, is the result which might be expected from having the movement of the air under absolute control. To a question as to whether the patients ever complained of draughts, it was replied that sometimes they complained of a draught when one of the window-blinds was half-down, and they saw it waving in the in-coming current; "but we pull up the blind so that they cannot see it, and then they do not feel a draught any more." All this is in regard to the system as applied to the hospital wards, which are rooms under special conditions, and are best ventilated in this manner. We should not apply the system to the administration rooms, nurses' home, &c., which are more in the nature of ordinary living rooms. In the board-room we were conscious of a shut-up feeling in comparison with living-rooms generally, and we should prefer the feeling created by frequently opened windows. But we do not expect a hospital ward to be like a living room, nor can windows be well opened there in winter, as the room is continuously occupied day and night. For the ventilation of the wards the system is admirable; and it will be equally suitable for concert-rooms and theatres, where a special supply for an unusual number of persons is required.

It should be noted that the ventilation is divided into eight separate systems worked by eight fans, but in case of the breakdown of a fan two systems can be coupled and worked by one fan.

The annual dinner of the Institute was held in the evening in the Grosvenor Room, Grand Hotel. The President (Professor Aitchison, R.A.) was prevented by indisposition from attending, and the chair was taken by Mr. H. L. Florence, Vice-President. The following gentlemen were present amongst others: The Lord Mayor of Birmingham (Alderman Beale), the Deputy Lord Mayor of Birmingham (Sir James Smith), Sir Benjamin Stone, M.P., Mr. J. Powell Williams, M.P., Mr. W. Kenrick, M.P., Mr. J. H. Cartland (High Sheriff of Warwickshire), Mr. J. Thackray Bunce, F.S.S., Principal Heath (Mason University College), Rev. E. F. M. McCarty, Rev. A. R. Vardy, Dr. Saunby (President, Birmingham Medical Institute), Mr. Whitworth Wallis, Mr. J. T. Middlemore, Mr. C. E. Bateman (President, Birmingham Architectural Association), Mr. A. E. Sawday (President, Leicester Society of Architects), Mr. R. I. Bennett (President, Manchester Society of Architects), Mr. George Corson (President, Leeds and Yorks Architectural Society), Mr. David Barclay (President, Glasgow Institute of Architects), Mr. W. M. Fawcett, Mr. Ernest George, and Mr. E. A. Gruning (Vice-Presidents of the Institute), Mr. W. Emerson (hon. sec.), and Messrs. Aston Webb, W. H. Bidlake, T. E. Colcutt, W. Doubleday, John Ely, E. M. Gibbs, Wm. Henman, W. J. Locke (secretary), E. W. Mountford, P. Gordon Smith, H. Heathcote Statham, John Slater, H. D. Searles-Wood, and others.

The Chairman, having given the toast of H.M. the Queen, and afterwards that of H.R.H. the Prince of Wales and the Royal family,

Sir James Smith proposed "The Houses of Parliament," and in doing so said that every one, especially those who did not live in London, took a pride in the Houses of Parliament, and agreed that the buildings were such as the nation could be justly proud of. It was a curious coincidence that the best public building in Birmingham, viz., King Edward's Grammar School, in New-street, was also designed by Barry, the architect of the Parliament Houses. He was afraid Birmingham could not boast of many buildings of the same merit as this. Birmingham was rather a city of manufactures, and there was not much scope for architectural beauty in building factories, especially when all wanted their factories as large as possible for the smallest amount of money. In taking a stranger round Birmingham to show him the public buildings a start should be made at the Grammar School. Then, if the visitor could be got to keep his eyes shut until the Town Hall was reached, a good impression would be produced, for the Town

Hall, both inside and out, was a building of which Birmingham folk were not ashamed. Some of the modern buildings, such as Mason College, the Victoria Courts, and the new General Hospital, did the city credit. The City Corporation had recently had offered to them by Mr. J. T. Middlemore, one of Birmingham's most generous citizens, some very valuable pictures on condition that the Corporation should build a new art gallery. If this offer were accepted by the City Council he hoped Birmingham would have a new art gallery worthy of the pictures it would contain, but he recognised that the erection of the proposed new gallery would not be without its difficulties. It must be connected to the present municipal buildings by a bridge across a street, and he feared that an angel—much less an architect—would be puzzled to give them all that they wanted. To design this bridge so that it would be in character with the new building and also in keeping with the old, would not be an easy matter. The bridge must be as light and beautiful as a dream, and yet be substantial enough to take six aldermen abreast. He was glad to see that the "severe order of architecture," as Mr. Morris called it, was dying out and that buildings with cemented fronts were not now being erected. The fashion in architecture was always changing. To-day it seemed to be the reign of terra-cotta, and those who were having new buildings erected at the present time might feel as confident that terra-cotta materials would be used as that there would be extras on the architect's specification. In all new public buildings it was desirable that there should be some endeavour to elevate the taste of those people who spent so much of their time in factories by showing them specimens of architecture which would have an ennobling influence. Mr. Ruskin had said that industry without art was brutalising, and he was glad that the members of the architectural profession often persuaded their clients to erect much finer buildings, and buildings which were more creditable to the city, than, without the architect's advice, would have been provided. In London of course they would always find the best buildings. Every agency, every insurance company, every bank, must be represented there by an imposing architectural structure. The theatres erected in London during the last few years alone were almost a school of study in themselves, and in his opinion the only public buildings in London which were absolutely out of date were the railway stations. With one exception the London railway stations were very ugly, and most of them devoid of any beauty at all. If only the members of the Royal Institute of British Architects had a free hand—and of course railway companies would not carp at a few extras—what a transformation they could make!

Mr. Powell Williams, M.P., in response, said the Houses of Parliament were impressive, stately, and appropriate, notwithstanding the insignificant fact that the Second Chamber was not at all capable of holding the persons for whose accommodation it was intended. That, perhaps, did not matter very much, because he had not himself observed, except on very special occasions, any particular eagerness on the part of the peers to be present in their places. There was something about the Houses of Parliament themselves which showed on the part of the man who designed them a real genius for his profession, and it was sometimes a matter for wonderment that their style and form were not more frequently copied. The exterior looked all tranquility, and that was a considerable advantage considering what sometimes took place inside. Internally, the structure answered its purpose very well.

The Chairman then gave the "Corporation of Birmingham. As he travelled towards Birmingham that afternoon, he said, he was utterly at a loss what to say about its Lord Mayor and its Corporation, because Birmingham municipal life was a subject of which he was profoundly ignorant. But on reaching the suburbs of the city he looked out through the window for an inspiration, and saw a tall chimney and some smoke. These gave him what he thought would be a good subject. Architects regarded smoke as their most determined enemy, for it destroyed material, and form, and colour, only leaving proportion as a distinguishable feature, and proportion was, unfortunately, the feature in which architects were mostly deficient. Smoke they, as architects, were well accustomed to. All great schemes began in smoke; some continued in smoke; and not a few ended in smoke; but no one could have failed to recognise that in the last few years great progress had been made by all municipal institutions. Wherever they went they could not fail to notice the magnificent buildings put up by the great provincial towns—greatly to the benefit of the architects' profession, many members of which were thereby enabled to make fame and, it was to be hoped, also fortune. On reaching Birmingham he perceived that the city was not enveloped in the dusky cloud he had expected, and his one topic for discussion was therefore taken from him. But during the short time he had been in Birmingham he had been surprised to see the magnificent scale on which public improvements were carried out. Their new street, for instance (Corporation-street), was carried through in a straight line without any of the awkward curves and corners and unexpected divergencies they met with in all the later so-called improvements in London. It was a very great thing to find a municipality carrying out such great improvements, and yet these improvements were in one sense not without their disadvantages, because, when one great scheme had been carried out a still greater one was next demanded. With the greatly-increased powers given to Municipal Corporations more was now expected from them—not only new thoroughfares and similar improvements, but pellucid rivers and stately embankments, and public buildings of palatial and sumptuous architectural design. All these they looked for in the future; but there were many other important works—the dwellings of the poor and the working classes, for instance, demanded not merely actual buildings, but buildings containing some element of art which should spread its ennobling and elevating influence on the minds and feelings of the greatest possible number.

The Lord Mayor, whose name was coupled with the toast, replied. He said that, although Birmingham could not always be engaged on magnificent buildings which afforded scope for the great leaders of the architectural profession, they were continually extending in the suburbs, and even in the centre of the city the renovations which were taking place must afford great opportunities for the rank and file of the architectural profession. They had done something for the profession by their extensions, but they were doing more for the profession in another direction. For the prosperity of the artistic professions it was essential that there should be a public capable of appreciating art, and the Corporation of Birmingham for some years past had been giving special attention to the education of their young people so that they might become able to realise the beauties of architectural design. When they had been educated sufficiently the young people would be able, in a walk through the streets of Birmingham, to see every variety of architectural design—more or less embellished or disfigured by that smoke to which the Chairman had referred. With this great variety of architectural design it was no wonder that already, without waiting for the development of the critical faculties of the young people, they had a great variety of criticism, and this criticism came quite as much from the members of the architectural profession as from any other source. He could not assume that any of the architectural criticism arose from professional jealousy, and therefore he concluded that there was a wide diversity of opinion among architects at the present time as to what really was good, bad, or indifferent in architectural work. This led him to ask whether the rising generation of architects was taking advantage of all the possible opportunities in art education. To that question he did not know the answer, but it was quite certain that if they were not, and if the public were being educated in art at a greater rate than the members of the artistic professions, there would be something very much amiss in the future. Passing on to speak of the relations of municipal authorities with the architectural profession, the Lord Mayor said that, taken individually, the members of the Birmingham Corporation, for instance, were excellent men of business, but when they were taken collectively they often sacrificed business instincts for what they considered to be of greater importance—matters of principle; that was so particularly in regard to architectural matters, and he often felt that it would be wiser as a rule on the part of the Corporation to discuss architectural matters in the same way they would if they were acting as private individuals, and not to blindly insist on a competition, whatever the subject might happen to be. While recognising the advantages of competitions as a rule, he thought there were exceptions when they would like to break away from that rule and talk over with the architect any proposed new building, in the same way as they would if they were acting privately for themselves.

Mr. J. T. Bunce proposed "Architecture and the Kindred Arts." He asked his hearers to consider what a large and weighty subject his toast dealt with—Architecture, the oldest and most venerable of all the arts; the art which in its principles and in its visible form and in its developments from the age of the cave-dwellers to our own day embodied and recorded the growth of civilisation and the history of human progress; the art which had not ineptly been described as "the printing press of all ages." Then the other part of the toast—the Kindred Arts; mainly the arts of sculpture and painting with other forms of internal and external decoration. As to how important these were, and how closely they were related to architecture, there was the testimony of two eminent witnesses. M. Viollet le Duc said in his "Lectures on Art" that "sculpture and painting are to architecture what the drama and poetry are to music—its derivatives, its necessary complements." And Mr. Ruskin, speaking in his broader and stronger way, declared that "there are only two fine arts possible to the human race, sculpture and painting. What we call architecture is only the association of these in noble masses, or the placing them in fit places. All architecture other than this is, in fact, mere building." Speaking before so many masters of architecture, he would not venture to contest this dictum of Mr. Ruskin, nor attempt to trace the growth of architecture and its kindred arts in their infinite developments. The only course to be followed on that occasion was to relinquish a hopeless task and put aside such a tremendous theme. The toast was to be replied to by two gentlemen well known in Birmingham, one an artist-architect, and the other a generous benefactor who, by his appreciation of the highest form of art and by the munificence of his gifts to the community, had made his name famous throughout the country. It was therefore of Birmingham that he desired to speak and to show what advances in living memory had been made in the promotion of architecture and its allied arts. Not so very long ago Birmingham was an ugly town. Art was not unknown in the town, for Birmingham had produced some great painters and a fine succession of great engravers; the Society of Artists had kept steadily for many years a brilliant light; and there were in private hands several fine collections of pictures. But the community itself had done little for art in any form but that of music. Excepting the Town Hall there was no public building of distinction; the chief streets were narrow, ill-arranged, mean in their architecture—a poor, debased, sham classic being their main characteristic in this respect. Factories were hideous in their plainness, and but for a few examples of fine half-timber work—now unhappily mostly swept away by the so-called "march of improvement"—houses were devoid of taste in design, consisting, as a rule, of the familiar rectangular boxes punctured at intervals with holes to serve as doors and windows. Now, thanks to municipal spirit, to advancing education, and to the skill of later architects, what a change had come over the town! They now had broad and handsome streets, cut through once-congested areas, and giving free play to light and air—streets which would bear comparison with the best in any town in the kingdom. Though Birmingham still possessed some public buildings of which Birmingham folk were not inordinately proud, there were others which showed a great measure of progress, such as the noble Parish Church of St. Martin, the Mason College, the School of Art, the Midland Institute, the new General Hospital, and the exquisitely graceful Victoria Courts, and they had also a singularly fine series of Board schools. The newer factories and warehouses were, many of them, stately structures, the shops were often marked by artistic quality, and a large proportion of suburban dwellings erected within the last twenty-five years recalled the days when English domestic architecture was at its best and highest. He did not say that they had attained it, but in much of recent architecture architects and their

clients had striven to work with the spirit of those great Italians, who, at a happy period, united the strictness and severity of Gothic with the richness and freedom of the early Renaissance. In not a few buildings, public and private, the aid of the kindred arts of sculpture and painting had been called in, the former freely, and, as to the latter, it was something to have enriched the Town Hall with mural pictures, and a great thing to possess the magnificent series of Burne-Jones windows in St. Philip's Church. Much more had been done than this. The education of the people, particularly in the artisan classes, in the principles and methods of true art, in the museum and art gallery and by the Municipal School of Art (which included an architectural school), had been attended with a large measure of success. These details of local progress merely touched the fringe of a great subject into which he could not more deeply go. He therefore gave the toast of "Architecture and the Kindred Arts." Architecture, impersonating her as the Mother of the Arts — recognising her majestic unity, and yet the grace of her infinite variety — placed between her handmaidens, Sculpture and Painting, inseparable from her as the complement of her structural designs and as the necessary enrichments of the royal robe she wears. The names of Mr. Bidlake, artist, teacher, and designer, and Mr. Middlemore, patriotic donor of priceless works of art to Birmingham, were coupled with the toast.

Mr. W. H. Bidlake, in responding, said that although the exclusive spirit of early times had passed away and a broader and more altruistic one had taken its place, architecture, if she were true to her traditions, would still express, as she had always expressed, the ideas and ideals of the times. In Birmingham the commercial and the municipal ideals were dominant, and he believed it was quite possible for architecture to express those ideals as well as to express the ideals of more classical periods. The municipality no doubt owed much to architecture, and architecture in turn owed much to that broad and enlightened municipal spirit which required not only that a building should be useful but that it should also be beautiful.

Mr. J. T. Middlemore, also replying, said that art in England had much to congratulate itself upon: the multiplication of schools of art, the appreciation of what was really good in art, whether applied to buildings or to pictorial art, and the dissatisfaction generally felt with the pompous, the pretentious, and the unbecoming. The dignity of the calling of the artist had been raised enormously within the last half century, and artists themselves would acknowledge that the emoluments of their art had been much increased. It would be interesting to hear some explanation of what produced good and great art amongst a community nowadays. The great mediæval art was produced by a great Christian inspiration, accompanied doubtless by a revival of learning, and an earnest and thoughtful outlook on life. A deep faith, no doubt, produced a great art, and the deeper the faith the higher would the aim and effort of the artist be to do justice and to give reality to his work. Looking at our own times, it seemed to him that the same mental and moral forces which produced Watts and Holman Hunt, Burne-Jones and Millais, also produced Coleridge and Wordsworth, Tennyson and Browning, Newman, Liddon, and Westcott, Carlyle and Froude, Sir Wm. Hamilton and J. S. Mill, George Eliot, Dickens, and Thackeray. A spiritual course aroused the energies of these great people, and without its influence those energies would have lain latent or only half aroused, but on the whole the nineteenth century had deserved well of its children intellectually, morally, and artistically. What of the twentieth century? To him it seemed that one of the most notable spiritual forces would arise from the intense desire that to all, even the poorest, every possible means of culture should be open to every man, and have a chance for the growth and development of his own nature. This intense desire had produced our present galleries, and libraries, and schools, and it would, he trusted, grow into a great formative inspiration, under the influence of which men might be less worldly and selfish, and life be simpler and nobler, and even art itself more sincere, more great, and more elevating.

Sir Benjamin Stone, M.P., in proposing "The Royal Institute of British Architects," detailed his familiarity with all the great architectural works of the world and declared his high conception and exalted feeling for architecture and for the ennobling part it had played in the history of the world. All could not now be architects, but to architecture even the layman owed a duty, that duty of respecting and preserving the ruins of ancient architecture from the vandalism one met with every day—vandalism which was a disgrace to modern society. Only on the previous day he went into a church by chance and found that a magnificent rood screen had been cut in two because the churchwarden wanted to put in some furniture. What surprised him more was that the same churchwarden had taken some miserere seats and chiselled off the grotesque figures underneath because he thought they verged on impropriety.

The Chairman responded on behalf of the Institute, and said that it would be a great pleasure for him to report to the President that their meeting in Birmingham had been so successful. The Royal Institute of British Architects existed for several purposes—for the advancement of the art of architecture and for the protection of the architects themselves. By the great extensions it had recently made in connection with allied societies, now numbering no less than seventeen societies in different parts of England, and even extending to Australia—they had naturally increased their influence and at the same time they had created a bond of brotherhood which they were anxious to sustain and keep. Speaking of the proposed University for Birmingham, Mr. Florence said that as the proposal had excited such a great deal of attention and interest he thought it advisable to see what subjects had been specially taken up at the University. He was surprised to find that, in spite of the great influence of Sir Benjamin Stone, and all they had heard from the leading lights of the City, and from members of the City Council that night, architecture was not included in the scheme, and he was afraid that public interest in architecture was not quite so sincere or so enthusiastic as the proposer of the toast would wish it to be. As further illustration of this he would refer to another city, at least as well known as Birmingham, where, in public advertisements for an architect to be engaged in the superintendence of the construction of some great works, the architect was to rank the same as a tramway director. He would be put on the same level and receive exactly the same salary. That, he was happy to say, was not in Birmingham.

Mr. W. M. Fawcett, Vice-President, gave "The Birmingham Architectural Association and the Allied Societies," and commended the Institute for having thrown open its arms and endeavoured as far as possible to join the country members with it in forming a mutual body for the representation of the profession, and for promoting the general good and maintaining the high standard of the profession.

Mr. C. E. Bateman, President of the Birmingham Architectural Association, and Mr. R. I. Bennett (President of the Manchester Society of Architects) replied, the latter remarking that he was looking forward to the time when, by the aid of the examinations, their profession would be made as close as that of the law.

Mr. Aston Webb proposed "The Guests" and the Rev. A. R. Vardy having briefly replied, the company separated.

THE ARCHITECTURAL ASSOCIATION:

THE POSITION OF ARCHITECTURE AMONG THE FINE ARTS.

THE usual fortnightly meeting of the Architectural Association was held on Friday last in the Meeting Room of the Royal Institute of British Architects, No. 9, Conduit-street, Mr. G. H. Fellowes-Prynne, President, in the chair.

The minutes of the last meeting having been read, and Mr. W. Milner having been elected a member, the Chairman announced that the lectures by Mr. Max Clarke on Drainage and Water Supply would commence on Thursday, January 5.

Mr. Edwin T. Hall then read the following paper on "The Position of Architecture Among the Fine Arts":—

The subject on which I essay to address you this evening is one of so wide a range, a subject on which so many books have been written, that I cannot hope to treat it fully in the limited time at our disposal, but only rather to suggest matter for reflection; and I must at the outset ask your kindly and patient consideration for my shortcomings.

In approaching a subject like this, one is at once face to face with the necessity for definitions, and the two at the base of our fabric are: What is fine art? What is architecture?

I suppose we are so used to these terms that we feel rather a shock in being asked if we really understand what we confusedly know.

Fine art has been defined as that power whose great end is to give pleasure, and the pleasure we have in contemplation is the higher or intellectual to the exclusion of the lower and sensual. The vehicles by which this higher pleasure is conveyed to us are, of course, the senses, so that we get sensuous and intellectual, or reflective pleasure. By hearing and by seeing, fine art is appreciated, and the pleasure it affords is the greater in proportion to its permanent retention by the intellect, and in proportion to the tranquillity with which it is so conveyed.

Fine art has been also defined as the representation of an intended idea, the expression of an idea in matter, while the ideal in art is the rejection of a rude and crude act to illustrate an emotion and the selection of a more subtle and poetic mode of illustrating the idea.

The definition of architecture varies almost with every writer on this subject, and one is sometimes appalled to hear the courage with which a young architect speaks, and, with the confidence begotten of enthusiasm, lauds this building as good architecture, and decries that as devoid of architecture. What is this art of architecture? Mr. Ruskin says in one place "it is a science of feeling more than of rule," in another it is that which "taking up and admitting as conditions of its working the necessities and common uses of the building, impresses on its form certain characteristics visible and beautiful, but otherwise unnecessary." So that in his view architecture is a gloss separate or separable from the building.

Mr. Fergusson defines architecture as "the art of ornamental and ornamented construction." To emphasise this he says that in a building it is the art of the engineer which consists "in selecting the best and most appropriate materials, and using them in a scientific way, and where the engineer leaves off the art of the architect begins." In other words, the planning and the constructional design of the building are works anterior to the "architecture" of it, this being a superimposed ornament. Indeed, he give us an illustration of a building, and shows how he adds architecture to it. M. Viollet-le-Duc takes a different view. He says "Architecture and construction must be taught together. Construction is the means, architecture the result. Architectural construction is the employment of materials according to their quality and their adaptability with the idea of satisfying a want by the most simple and solid means, giving to the constructed object the appearance of durability and proper proportion subject to certain rules imposed by the senses, reason and human interest." Briefly, a building must be devised by one mind so using construction as to result in a work of architecture described as having specified æsthetic properties.

Mr. Eidlitz's definition is less involved than that of M. le-Duc, and carries the point further. He says, "Architecture is the art which models buildings, which teaches the development of structural forms," the word development comprehending the continuous evolution of architecture as distinguished from its crystallisation into styles.

Mr. Statham, in his recent work on "Architecture among the Poets," defines architecture "from one point of view as the realisation of an imaginative conception in composition and outline; from another as the craft of building."

The first part of this, it seems to me is well stated, and it might be added that the architect sees mentally the completed building beyond and through the veil of his drawings. The latter definition, however, appears to me to be involved in the former, because, as Le-Duc says, the craft of building is merely the means used to attain architecture, which is the end. A drawing can never faithfully represent a building; the depicted block lacks density and an aëreal separation from its surroundings. To us who pass our lives among drawings they become a sort of shorthand, and are intelligible in a way they can never be to the uninitiated.

Hegel defines a work of art as the interpenetration of matter and thought. Viewed in this light, the matter in an architectural production

is so relatively massive and intractable that to penetrate it with thought is the goal for which we must laboriously aim, and he who can subordinate the material to the mental in such a production is entitled to rank as an artist, and to rank higher than other artists in proportion to the difficulties of the material in which he has to express his ideas as compared with those in which they have to work.

Having endeavoured shortly to put before you some conceptions of fine art and architecture, I will ask you to consider with me the relations of the fine arts one to another in their mode of expression, and from this to endeavour to find what is the best rule of life which will help us most to carry forward the banner of our own art.

We shall speak of the arts of music, poetry, the drama, painting, sculpture, and architecture. Of these painting, sculpture, poetry, and the drama are imitative, music and architecture creative.

As ideas in art must be expressed in language understanded of the people, it is essential to convey the artist's meaning by depicting something in imitation of or based on principles observed in nature, that is in real life. That this is done in painting, sculpture, and the drama is self evident, but it is also the same in poetry. The poet's conceptions are descriptive of man or of some other work of nature, and the vivid portrayal of the scene or effect desired is a measure of the artist's power. Thus in the Iliad, and Odyssey, Homer's gods and warriors and women are pictures appealing to us by our power to realise them, and the more subtle pictures of poets' thoughts are conveyed by imitating that which we can grasp from general knowledge.

All the imitative arts may raise the subjects they depict from the commonplace to the ideal, and the abler the artist the greater his success in this direction.

Music has nothing to imitate. It is a spontaneous creation, and it may convey to the mind suggestions of anything or everything in nature.

It is probable that music of a kind is almost as old as speech, and we know that at least thousands of years ago musical instruments were used. There are representations of such instruments on Egyptian monuments, and we have descriptions of them in elaborate variety as in use in Assyria and Babylonia.

The European music of to-day, the opera, the oratorio, are but a few centuries old. These originated in the fifteenth or sixteenth century, at the time of the great Renaissance. From the exhibitions we had in London a few years ago of Japanese music it would seem that in the extreme East no such development has taken place. That music is but a rhythmic cadence of few tones.

Here it has attained such a development that it speaks to us in a language of its own, quite apart from words. It portrays all emotions. But it seems to me it differs from all other arts, in that it is almost incapable of pandering to the lower passions.

It is perfectly true that, used with the accompaniments of words and dramatic action, it may and does minister to sensual tastes ; but alone it breathes a purer air and tends always to refinement.

Luther says, "Music is the grandest and sweetest gift of God. Satan hates music ; he knows how it drives the evil spirit out of us." And many of us can speak of our own experience how often in the battle of life, when we have been almost in despair, music has calmed and softened and elevated us, faith and courage have revived, and we have been renerved to greater exertion.

Poetry would appear to be of later origin than music, in that its aim has been to depict that which pre-existed in the human history, or prophetically to discourse of that which is to be. It is the adornment of expressed thought in any form. We recognise it in descriptive histories, and probably no more poetical piece of writing can be found than the Book of Job, written many centuries before Christ. It is a book which Mr. Froude, the historian, goes so far as to say "will one day perhaps, when it is allowed to stand on its own merits, be seen towering up alone, far away above all other poetry in the world."

The influence of poetry on the race is diverse. It may exalt or elevate the soul, it may debase it. Poetry, being a form of speech, can be artistic while it panders to the lowest of our natural appetites.

The drama is a form of poetry depicted by action. Whereas the epic poem appealed to the ear, the drama appealed to eye and ear by a more vivid and realistic representation, exciting more profoundly the interest of the audience. In historical sequence it was later than either music or poetry. Probably its date is the sixth or seventh century B.C. Its influence is great, but it is evanescent. It is an acted sermon whether its aim be high or low. It is taken not as daily food, but as an occasional tonic.

We now come to that art which is primarily the subject of our consideration to-night, and as such we must consider it in greater detail than the other arts. I propose to consider it together with the sister arts of painting and sculpture, as they have been so intimately associated with it.

When the necessity first arose for man to build in order to protect himself from the elements or his natural enemies, his buildings would take their form on strictly utilitarian lines, using the material readiest to hand. Thus in a timbered district a conical hut of wattles covered with leaves would be the first form of shelter—suggested by the drooping branches of a tree—and in an arid or stone district the earliest form would be doubtless the excavation of a hole under a large flat surface slab, the sides of the excavation being lined with stones to support the edges of the large slab and prevent it slipping or causing the earth on which it rested to give way under its weight. Many such can be seen in Brittany to-day.

As the family or clan increased and, with its increase the feeling of greater security obtained, the wattle hut would give way to the larger timber room, and the burrow would be replaced by the building up of stones above the earth to form a walled enclosure.

The existence of large flat stones would suggest the formation inside the enclosure, against its outer walls, of a portion covered with flat slabs supported by pillars of stone on the inside, and this feature in principle is preserved to this day in the cloister or ambulatory of courtyards and ecclesiastical buildings in the West, as well as in the older buildings of the East.

In Iceland a large native house is now but a series of detached wooden rooms joined together by a corridor.

The high pitched roof arose in countries of heavy snows, and a wise conservatism retains it in variable climates. The accessible flat roof belongs essentially to the tropics or hot climates, its purpose being to afford opportunities for getting the greatest amount of air by day or by night.

Architecture was born when, in the contemplative mood of leisure, the man of the stone enclosure began to reflect that the pillars of his colonnade might be arranged not at the distances necessary to support the various sized stone slabs which came readiest to hand and were used as covers, but at regular intervals, selecting his cover stones to suit; and that he might reduce the rude outlines of his pillars to regular shapes ; and the man of the timber house began to think that he might, instead of having a lot of detached rooms, put them together under one roof, and when they were so joined might remove the separating walls of some and place pillars in their stead.

Gradually with the process of political and social education which taught him and his neighbours to live in mutual dependence, would come the recognition of the necessity for order and organisation, and these applied to the home would develop the architectural faculty of convenient planning, and so on until the rude congeries of rooms would become an architectural entity, symmetrical and rhythmic, and thus would be evolved what Fergusson calls "the æsthetic form of the technic art."

A further development would arise when assured of the stability of the Commonwealth. Man, in contemplating the grandeur of nature, the sublimity of its outlines, the mystery of its forests, the dignity of its rocky terraces, the massing of its lights and shades, would reflect on the mysterious powers which dwell in these, and on the laws which control the seasons and the storms, and a desire would arise in him to do honour to the Unseen Author of these mysteries by erecting a temple. In such a building the narrow limitations of domestic life would have no place, and the architect, attuning his mind to this great Author, and finding within himself a reflex of that Author—a creative power—would reverently set himself to produce a work which should, in however dim a fashion, reflect the emotions with which nature and his subject had impressed him.

In such a structure there would be no place for the lighter moods of life. The predominant key would be dignity ; its harmonies, repose, mystery, and symbolism ; their combination appealing to mankind in its contemplative mood, conveying an expression, as Ruskin calls it, "often serious and sometimes melancholy—an equivalent for the sorrow, trouble, and mystery of human life." It is by gradual process we thus see the art of architecture vivifying the dry bones of construction, and making them live and speak.

This spirit once aroused would permeate the world.

The palace would come next, in which the oratorio would be replaced by the opera, expressive of the various phases of life. The broad outlines of the structure would be representative of the dignity of life as a whole. Subordinated to this, the various parts would appropriately express the lighter moods.

In the temple the mysterious attributes of the Deity would be symbolised and the phases of His worship expressed. In the palace the glory of the Man would be emphasised and enhanced, so that the stranger should be impressed with his majesty and importance. The enclosure would mark that the King's abode was set apart. Through its stately portals, as through a frame, the eye would be led to contemplate the picture within, and a visitor, conducted for the first time through its courtyards and vestibules, its colonnades and halls furnished with the pomp of armed guards, the peopled bustling of a busy place, would be emotionally affected, his senses impressed, and his mind prepared by the time he reached the hall of audience to render homage to the master mind. The effect I have endeavoured to sketch is recorded of the Queen of Sheba when she had been conducted through King Solomon's palace and had seen its magnificence, "There was no more spirit in her."

From the palace the spirit of architecture would, through the ages, percolate downwards, its steps growing slower and its form attenuated as it receded from the centre of wealth and leisure, of culture and refinement, until it would evaporate at the abodes of grinding poverty, at the factory where Mammon alone was worshipped.

And here parenthetically I would dare to dissent entirely from Mr. Ruskin where, in the "Seven Lamps," he inveighs against the external artistic treatment of trade premises. He says you must not mix architectural ornament with business, but should only use it for places where you rest. I venture to affirm, on the contrary, that in the refinement of the tradesman's surroundings there is most hope for raising the artistic standard of his wares and fabrics, and indirectly of his customers. It seems to me that the external treatment of every building is a matter of the deepest concern to the man in the street ; indeed, every building owner in a city should be encouraged to recognise his responsibility in the architectural treatment of his building as part of the whole street, just as in his moral conduct he has a responsibility to the community.

Architectural ornament is to building as the leaves and blossoms are to the structure of a tree—an artistic development of the skeleton, evidencing life—a perfecting. But, like the leaves, it should be characteristic of, and in harmony with, the structure within.

The relative position of architecture among the associated arts of painting and sculpture may be likened to the relation of trees to flowers. The trees are the more stately, the broad features which give dignity and masses of subdued tone to a landscape ; the flowers the decorative colour and brightness.

The tree in its perfection is, so to speak, a part of the landscape. Painting and sculpture are more like the flowers of the earth, bright, poetical, refined. They must be examined near and in detail. They are the companions of leisure and of ease, while an architectural composition is for him who runs to read, for the virile man, the man of activity. So that for a monument to record a great victory or a national achievement, an architectural building is appropriately the medium almost universally chosen, while the sister arts are selected to record a pageant, an act in the great drama—in short, to depict the detail rather than the mass.

Architecture seeks to express the more per-

manent in nature; sculpture and painting the more evanescent, the ever changing.

The picture, too, has a frame to enclose it, to remind the onlooker of its limits. A work of architecture has its own proper place under the vault of heaven and calls out that it is part of the actual.

Now, to be of any living and vitalising value we must bring home architecture to our daily life and surroundings. I ventured last autumn, in speaking to your President's address, to suggest a doubt as to the wisdom of teaching architectural history in the early stages of the Architectural Association curriculum, and proposed rather that the student's mind should be first trained to understand the principles of art and of design, not only by studio work, but by the study of buildings, the history coming later when his trained mind would know better how to appreciate it. Shortly afterwards the Bishop of London, discoursing to teachers of the School Board on learning, said it was useless to start a child's education with the Witenagemote, and that it was better to teach him Constitutional history by starting with the actual around him—with the policeman whom he knew—and from the present to lead him back step by step, by which means, said the Bishop, he could learn to appreciate history and so get back to the cradle of our Constitution. I feel that is our best position.

We should strive to learn the principles constituting the basis of design and to apply the knowledge of construction we possess now—a knowledge wider far than any possessed by the ancients—to meet contemporary wants.

Do not suppose I am belittling the study of history or deprecating research. These are of immense value to an architect, but one may be learned in them and never be an architect.

Nothing is more cramping or sterilising to the mind than, by becoming saturated with history, to become the slave of "style," be it Classic, or Gothic, or anything else.

To design in a recognised "style" is to arrest all art progress; to always seek for and follow a precedent, be it for grouping or outline, for planning or moulding is the negation of art. It is living in the dead past, in a world whose aspirations, whose moral life, whose callings have but little relation to those of our day.

Mr. Fergusson tells us what are the "correct" proportions for a room, others what are the correct proportions of a column of an entablature, &c. As Mr. Eidlitz very properly remarks, "if rules of proportion existed, and a knowledge of them enabled men to produce great architectural monuments, architecture would become a trade, and not an art."

My younger friends will say all this is true, but so true that it is unnecessary to speak of it. But I would ask them to look around, to study the buildings only within the earlier years of this century, to read, when they have nothing better to do, the literature of the battle of the styles fifty years or so ago.

Mr. Ruskin, in one place, says we are unwise to build in any other style than that of the pointed arch, "because it is the strongest in structure and a beautiful form, while the square head is both weak in structure and ugly in form."

The Egyptians and Greeks did not think this. They certainly knew of the arch. We have recently heard of the discovery of a brick arch in the tomb at Denderah erected 4,000 or 5,000 years ago, and yet the architects built their great monuments in the trabeated style.

The fact is, we are all inclined to worship the great achievements of the artists of the past, and to regard their work rather than the spirit and principles which underlay their work. Had our great mediæval church builders been trammelled by precedent and style, how would their marvellous art archievements have been produced? We should never have had their masterpieces to glorify the land.

That which places architecture above the sister arts is that while they, with few exceptions, of necessity record emotions and ideas of the past or present, architecture is, or should be, ever labouring to bring forth a new organic creation, something in sympathy with the needs, the developments, the aspirations of the times.

I want to emphasise this word *new* because the aim to be original is often spoken of as though it were a reproach. I am not defending wild and extravagant designs—though even they show life—but it is of the essence of vitality in art to depict that which has not been, to increase and multiply forms.

You will remember in Viollet-le-Duc's "Habitations of Man," there are two principles represented by Doxious and Epergos. Doxious who sees only in ancient architecture the *summum bonum* of art, and resents all change, who when he travels through the world for thousands of years is always with a sigh looking back to Egypt. This is the spirit of the rules of proportion, the worship of style, the negation of progress in science and art. Epergos, on the other hand, sees in the evolution and development and in the new offspring of architecture an evidence of godlike powers given to man, an evidence that life and not death is the keynote of the world, and he urges us on to strive, not stagnate.

If we approach an architectural design from the point of view of grasping the purposes for which the building is wanted, so planning it that its various parts adapt themselves to those purposes in such a way that all seems natural and harmonious; making the entrance-hall impressive and expressive with dignity, spaciousnessness and hospitality; arranging our windows so that the light shall suit the purposes of the various apartments, aërating with sunshine the various cubes so that sweetness pervades everything, breaking our large floor areas by columns, forming little surprises by arcaded recesses or galleries affording views of any particular picturesque groupings, and making all to grow naturally from our construction, we may produce that which will be both artistic and individualistic, an evidence of thoughtfulness and of the creative faculty. I suggest this in opposition to Ruskin's or Fergusson's theories about a building pre-existing with the architecture added. I suggest that a good plan, well thought out on the lines I have roughly endeavoured to sketch, is a work of architecture, although the exterior may be absolutely plain—nay, even uninteresting.

It is, alas! too often the case in commercial buildings that one is not permitted to make the exterior interesting — not allowed even to express or emphasise the leading lines of the composition; and in so far as this is the case the work is incomplete; it is, in fact, a sound conception not allowed to attain maturity. The Cave Temple of Kali (between Bombay and Poonah) is none the less a work of architecture because, with the exception of one end, it is on every hand walled in by the rock hill in which it has been excavated.

If, however, the exterior is to be ornamental, this effect should not be attained by added ornament having no relation to the interior, but the decoration should harmonise with and suggest the interior and its occupants, just as in a work of sculpture the exterior of a figure suggests the internal framework — the well-developed muscles, the network of nerves, and, above all, the impulse which actuates them.

To attempt a work of architecture by first settling the exterior and then designing the plan and general interior to lead up to it is fatal.

As an illustration of the correct principle of design, let us consider the idea of a Town Hall. It is first the centre, the heart, of municipal life, whence all other parts of the municipality are governed. It should thus be placed in the centre of a town, in an open square or place. Its various departments—or, to use a conventional phrase, its cells—should be emphasised externally and internally.

The emotions pertaining to each should be considered and depicted, or rather suggested; the relative importance of each to the other should be weighed in locating them; the prison cells, the Courts of Law, the offices, the entrance and assembly halls, the suite of reception-rooms, &c.; simplicity of plan and easy access to the departments being essentials.

The physical proportions of each group should evolve from these considerations and, in the mind of the architect, the exterior should grow *pari passu* with them, and should express each group and the unity of the whole.

The design of the exterior should also stamp with expression the mechanical functions of the several parts of the construction, and thus, as the various members of a human body are fitly joined together, the whole conception will convey to him who has eyes to see and mind to appreciate, the idea sought to be expressed.

In times not long past these principles were ignored and the exterior was designed, or rather copied, from a Classic temple—from a building which externally expressed faithfully the one cell which it contained, the abode of the god. Such an exterior has no relation to complex buildings of to-day. Or let us take at the other end of the scale the idea of a workman's small dwelling. My friend Dr. Godfrey Sykes, a well-known Medical Officer of Health, remarked to me lately that the solution of the problem of housing the million should be regarded from the sanitary, social, and ethical standpoints. Now the backbone and basis of our social polity in England is the home. The idea of a home is lost when a family is compelled to live in one room. What, then, is the idea of a home? Its central feature is the place of reunion of its various members—the living or common room—well lighted by windows and warmed by a stove or open fire. Where outlay must be restricted, we cannot waste money on passages, and there can be no objection to let the common room be a central hall, with bedrooms opening from it on two sides, the third side containing the scullery, water-closet, &c., disconnected by a ventilated lobby. Each bedroom should have a window and a ventilating flue, while the heat from the common room stove will be sufficient to warm the bedrooms, and so save both the cost of fireplaces and of fuel. Such a humble dwelling will be a home, and a congeries of such homes may be placed side by side in the country or one upon another in a town. In the latter case the staircase should, of course, be external to the houses. The æsthetic in such a dwelling as we have described can be expressed in simple ways, in little thoughtfulnesses of detail, in showing consideration for the housewife's wants and aspirations, making windows that will take flowers, in provisions for fostering modesty, &c.

In considering the expression of construction let us compare two types of buildings, and see the relation of construction to the design. Take a barrel-vaulted church. This vault, having an equal thrust at all parts of its bearing on the wall, demanded and received for its support a massive wall equal in thickness throughout its length, with relatively small openings. In such a case, buttresses at any points would be out of place. By contrast, take a groined vault; here the weights and thrusts are concentrated on points, the wall between these points is but a screen, and can be light in treatment, and may be pierced with windows of any size. The points of support, however, require to be of large horizontal section, and buttresses become necessities evolved from the construction. Did time permit, we could trace how this groining and concentration of loads led to all the characteristic features of Gothic design. In Viollet-le-Duc's "Rational Building" we have the whole scheme worked out.

It has a peculiar bearing on the subject of our paper, because it shows how practically a new art development was laboriously worked out from construction.

It teaches us that "art is the result only of sober, cool, intelligent thought and technical knowledge, which is acquired by hard, persistent, and long-continued labour," and further, that that labour evolved a result not otherwise to be attained.

M. Le Duc shows that practically the Romanesque builders had before them the remains of Roman vaulted buildings in their country and nothing else. They were not travelled men, they were too poor to import architects from abroad, and not having the command of unlimited labour and wealth like the Romans, they set their intellect to work to devise some means of getting similar results with home material and with home labour. Our author shows how, in the earlier part of the eleventh century, they built barrel-vaulted churches and halls which half a century later fell down; how, profiting by their failures, they again set to work with renewed energy and experience, and gradually, by slow but certain steps, evolved the Gothic groined vault; how this in turn led to the plans of piers, how the capital became a corbel, instead of being, as it was in many Egyptian, Grecian and Roman buildings, not a support but only an ornamental termination to a column. This may be seen at Edfoo, where the abacus is of the same width as the diameter of the column, while the capital is projected far beyond it, or, in other examples, where instead of abacus there is a square shaft between the capital and the entablature; and again in the groined vaults of some of the Roman thermæ, where the plan of the vault abutment is a square of the same dimension as the diameter of the column supporting it; above the capital and below the

vault springing is placed the complete entablature of the Classic order.

In some churches, both in Normandy and in England, capitals are dispensed with; but this appears to give weakness to the design. A mark of separation between the function of the arch and that of the pier is of great phonetic value, and as such the capital or impost moulding has commended itself in the great majority of our buildings.

Reverting to the Gothic art-craftsmen, we note how they carried down their arch mouldings into shafts on the face of the reduced piers, and so step by step and line by line a new art development—a new architecture—grew out of and was determined by the construction which it boldly displayed. Gwilt says "There is more constructive skill shown in Salisbury and others of our cathedrals than in all the works of the ancients put together."

It is not out of place to note in this connexion that while the Gothic shaft grew downward from the moulded arch, the shafts or fillets on the angles of Egyptian pillars grew from below and terminated in the non-functional capital.

We hear of taste in architecture, we hear of genius, but neither one nor the other could have dispensed with the more sterling and laborious qualities which evolved the new Gothic art, an art which has commanded and still commands the admiration of all who see its harvested fruits.

And here it is pertinent in parenthesis to remark on this much misused word taste. It is often spoken of as an intuitive gift, and many who arrogate to themselves its possession, dogmatise on matters of art as though the appreciation and knowledge of art need no training whatever. Artists are not so easily made. Taste to be of any value or authority must be the outcome of wide observation, of judicial power of comparison, and of education in its widest sense. And even then it is a variable standard which each sets up for himself, the result of his study or environment, and therefore in no way a standard of universal application. To a devotee of Classical architecture, the proportions of a Classic column are in the best taste, while those of a Gothic shaft are barbarous, and *vice versâ*.

Of genius in architecture we may say, as Mr. Froude says of the gifts of strength, of wealth, of rank, of worldly power, "It is a splendid instrument if nobly used, but requiring qualities to use it nobler and better than itself."

The architects and craftsmen of our most beautiful Mediæval cathedrals evolved their masterpieces, as we have seen, by laborious study of the materials they had to deal with, of the forces exercised by their material employed in different ways; and the constructive features arising therefrom became the motive on which their design was based. The various phases and incidents of Christian worship and ritual then led to the general planning of their building; the nave, the aisles, the transepts, the chapels, the choir, the chancel, the sanctuary—all made subservient to, or rather based on, the cross, the great emblem of their faith—and subsidiary to these, the chapter house, the library, the offices, the cloisters, &c. In every part we see plan and construction emphasised as integral parts of the art expression. In them there is no room for talk of the work of the engineer and builder first and the clothing of architecture added to this. Architecture as a fine art is everywhere, and the art atmosphere pervades the building not only in architecture, but in painted walls, windows, and roofs; in sculptured figures, traceries, and canopies, in music, in stately processions of men, in waving banners, in adoring congregations—the whole having its main aim in rendering glory to the invisible God, a God whose majesty and mystery, as revealed by Christ, led to the soul's uplifting in a way that must have been unknown to the Greeks, whose gods were but deified mortals of whom their votaries could have had but a measurable appreciation.

These were days when art permeated the masses, in dress, in pageantry, in village festivals, in guild processions. Be it remembered, I speak of the period when the priesthood of the Christian Church were self-denying men, living in a chosen poverty, the teachers, the guides, the protectors of their flocks, drawing to them all that was good and great and generous in rich and poor alike; and before the great canker of wordliness, of wealth, of lust of power, of intrigue and immorality, had sapped their influence for good; before the Pope had in 1489 commissioned the Cardinal Archbishop Morton, his legate, to make inquisition into the charges made against the monasteries, resulting as it did in such a condemnation by the legate as justified beyond question the worst of the accusations. In the earlier times Gothic art was a power to raise men. In the degenerate days towards the early part of the sixteenth century it not only lost its power over men, but it came to stink in their nostrils as associated with the falsity of those who had been its leaders and patrons. And with this loss of faith in the Catholic Church, the cult of Gothic architecture as a living and growing art fell into a trance, and so remained for centuries. The moral shock not only brought about the Reformation, it chastened the laity, hardened their natures, made them puritanical. Their reverence of God was indeed intensified. The virility of the people asserted itself, and the horrors perpetrated in the western hemisphere by the most Catholic Spanish nation sent such a thrill throughout England that no wonder the gentle and refining influence of architectural art was replaced by zeal and hatred against the system with which it was most closely related.

The energy of the nation was diverted. It became the instrument of Spain's destruction, and in fulfilment of that mission the great men of the Elizabethan era—Drake Frobisher, Gilbert, Davis (whose name is perpetuated in Davis' Straits), Hawkins, Raleigh, and many others became the pioneers of that colonial empire of which to-day we see the development. The lives of these men are most interesting studies. That they were impressed with a firm belief that they were doing God's work is beyond question. They were human, and some of them blunt, unlettered men with faults grave enough, judged by our standards of to-day; but Froude, Charles Kingsley, and Towle give us pictures of the purity of their lives, of their chivalry, their devotion to duty. It was in such an atmosphere and with these heroic surroundings that Shakespeare—as we are reminded by Froude—found living models for the finest and noblest of his dramatic characters; so that if art in one of its phases was banished, it in another blossomed in a way that has never been surpassed.

But while Shakespeare in immortal drama wrote of men and manners, of history and philosophy, architecture remained the history in stone of the past and passing ages; of the life of the nation from generation to generation. Take an old church, begun in the early centuries of our English civilisation, extended, varied; her gloomy interior of the earliest period opened up to light by large windows of a later period; modified in other respects from time to time; the rood screen, once the line of demarkation between the clerical and the lay, now denuded of its titular ornaments, often removed from its normal position to enclose a side mortuary chapel or a secular lord's pew. Such a church tells us of the evolution of our history and race—whether upwards or in decadence—of sacerdotalism, of puritanism, of the autocratic king or the revolutionary rabble. The beautiful building—the emanation of man's aspiring soul, the offspring of his highest faculty—the creative—breathes of man's high mission, "its tenderness, its heroism, its regrets, its aspirations," as Oliver Wendell Holmes expresses it. Under her sheltering wing she takes his life during his short sojourn here; she hallows his birth, she blesses his marriage, she mourns his death, and she, raised from the earth by his behest, finally takes his earthly part into her reverent keeping.

What so grand as the interior of such a historical work as Westminster Abbey! Her architecture, itself marking epochs in the nation's life, scarred but not marred with monumental records of her sons' self-sacrifice to duty; of their energy, their learning, their great endeavour in all the paths of physical and mental activity. In what gallery of painting or of sculpture can such sublimity be found? Here the sculptor's art appears as handmaid to attend the sister art. Sculpture is most sublime when, as here, it seeks not its own glory but to minister to hers; when it adds the grave and chaste beauty, so peculiarly its own, to the solid qualities of her reposeful dignity.

But while this is true, it is also true that each of the arts has its separate identity, a personality as distinct and as responsible as that of any member of a human family. Each must work out her own salvation, aim for her own ideals, and in such aim she may, and too often does, loosen the ties which bind her to her sister arts.

Yet let us again insist that architecture is organic. Sculpture is a representation of the organic; painting is inorganic, illustrative only.

In architecture sculpture may be used as an organic part of the structure, as figures in a Gothic doorway or as the caryatides in a Classic temple, but in such relation it is an accessory to architecture, a blossom on the tree.

In a somewhat different category we may cite the sculpture on the Parthenon. This is organic, and I particularly wish to refer to the frieze. It has often been conjectured how this frieze came to be placed in the shadow close up to the cornice of the cella within the peristyle. It seems to me this stately procession in such a position, viewed from a short distance, broken up as it is by the columns, appears unending, mysterious, and perhaps was intended to be symbolical of the march of conscious life through all the ages.

Detached works of sculpture are best seen to advantage within or in juxtaposition to a building. Viewed with a natural background of foliage, dissociated from anything architectural, they appear lifeless; but on a background of man's architectural creation they become instinct with life; they are then like jewels of price on the neck of a fair woman, embellishing and embellished. I have referred to our Valhalla, but the Loggia de Lanzi of Florence will be recalled by all as another illustration.

A painted picture is different. It needs, it is true, to be housed, owing to its relatively perishable nature, but for its appreciation as a picture, it demands exclusive attention, to be separated from its surroundings, the vision to be bounded by its frame, and the mind of the beholder to be detached from all else.

It is true that painting sometimes elects the position of handmaid to architecture when it is employed decoratively—it may be in a series of historical records locally appropriate to and fitly forming part of the architectural monument it embellishes. In this case each picture has some harmony with its fellow pictures and with the sombre neutral hues of the stone. In such case painting becomes broader, more catholic. The same applies to painted windows. They form part of the architectural composition; they enrich and beautify it; their detail is there, inviting careful attention, but like the surface carving on the exterior of a Venetian palace or the walls of a Gothic church, they are primarily the mosaic incrustation giving brilliancy to the whole structure.

Returning to our survey of Gothic architecture, we find that with the downfall of the monastic orders in England, and the Continental upheaval brought about by Luther; with the revolt of the laity against the priesthood, Gothic church building ceased, and closely following on its cessation the army of Craft Freemasons was disbanded, or, rather, dissolved to atoms. The revolt was so complete that Gothic architecture in England was banned as associated with oppression and licentiousness—the virtue and self-abnegation of its artistic founders being forgotten.

Meantime, the revival of the study of Greek literature disclosed to the student, as a new revelation, a people free, untrammelled, heroic, artistic, and god-like, the authors of pure and beautiful architecture, and cultured Europe turned to this fount for inspiration in all its art life.

In Italy, a demand for architectural monuments based on Classic lines found no school of architects at hand trained in the principles of their art, in the sense that the Gothic architects were trained.

The sculptors and painters who were called to design the new Renaissance buildings were not hampered by preconceived theories of design, or, indeed, by technical knowledge of old buildings, and, although they sought to create, they were more anxious to build palaces which they might decorate than works of architecture. They built, it is true, large buildings, but in few of them is the art a natural outcome of the construction. Many are frankly but backgrounds for painting.

As an illustration, we may cite the Chapel of the Arena at Padua, painted by Giotto. It is a plain, rectangular room having a painted wagon-vaulted ceiling with windows on one side, and not a moulding on the surface of walls or ceiling. As a work of the painter's art, the interior of the building is acknowledged as of the greatest beauty.

The Sistine Chapel at Rome was commenced

1473, finished 1541, and Mr. Fergusson, in order to show the difference between the arts south and north of the Alps, makes a comparison between it and King's College Chapel at Cambridge, built at the same time, 1479-1530.

The Roman Chapel externally was a barn, internally it was almost devoid of architectural mouldings or decoration. It has a barrel-vaulted ceiling, groined over the semicircular-headed windows at the sides. Its walls were covered with paintings by several artists. Its ceiling was painted by Michelangelo, and later the wall over the altar was filled with his great work "The Last Judgment."

The Cambridge Chapel, on the other hand, externally has a rhythmic division and a rich architectural treatment, while internally it is a web of architectural detail, all growing out of and expressing the construction. It has its pictures, but they are transparencies in glass.

The Sistine Chapel has been well and often described by able men, but if it has not already been noted I should venture to make a criticism in regard to its ceiling. This is a plain surface semicircular in section, divided into compartments by painted mouldings. As is well known, the central flat compartments from end to end are occupied with subjects ranging from the Creation to the Deluge, all illustrated with colossal figures. A spectator looking towards the altar sees the figures, it is true, in their proper or intended position, but seen from the altar end they are upside down and grotesque. Now, had all these compartments, instead of being flat, been constructed as shallow domes, either circular or square on plan, no such defect could have been possible, all figures that could be seen from either end or from the sides would have appeared natural in a partially upright position on the concave surfaces, and would not have looked as if they would fall. None could have been seen upside down, and from the art side we should have had the idea that each of the subjects forming the decoration of the dome separately sent up its praise and adoration to the Most High.

In St. Paul's Cathedral Wren had evidently this aspiring idea in mind when he treated his ceilings with shallow domes throughout. In Sir W. Richmond's beautiful decorations of the choir we lose the painful impression of the Sistine Chapel, and do not feel that his figures will fall, while each compartment raises its pæan to heaven.

In St. Peter's, at Rome, there are domes in the aisles, but the nave is a long plain vault.

I do not propose to enter here into any comparison between St. Peter's and St. Paul's, except in so far as it relates to my subject, but in that relation I would remark that, if the Sistine Chapel ignores architecture, St. Peter's on the other hand misuses it. At least three designs were made for it, and the conception appears to have eventuated in the idea of obtaining a building with architectural features and details on a colossal scale, but instead of the resulting effect being a beautiful monument, the immense dimensions of which could at once be grasped, the mark has been overshot. All scale is lost. The Gothic cathedral architects kept their detail—their shafts and mouldings, and even their stones—small, and, judged by the scale of these, their buildings looked very large, while it is stated as a fact that some of the largest are but of the dimensions of an aisle of St. Peter's.

Is it possible that this error arose from the fact that the Glory of God was not the only or main object of the building, but rather the Glory of the Pope, who wished to emphasise the majesty of his power among the nations?

In St. Paul's Wren avoided the error of colossal detail; his internal proportions became in consequence better, and there resulted a vista of imposing dimensions which the mind could grasp. The internal grouping, too, became more graceful; the double order, instead of the single one of St. Peter's, appears to lift up the roof; the domical compartments in the ceiling, to which I have already alluded, added to this effect, and led up to the great transeptal lantern and dome, the whole a conception of aspiring lines leading the eye and the soul ever upwards. Externally in almost every part it appears to be superior in grace of proportion.

Mr. Gilbert, R.A., recently at the R.I.B.A., spoke of Wren's cathedral as the work of a sculptor-architect, by which I think we understood him to mean one who in designing in architecture had the aptitude of the sculptor in proportioning his parts, and modelling the whole building as it were out of a lump of clay, producing a result graceful and so to speak well poised from all points of view.

In speaking of this modelling of a building, it seems not inappropriate to say a word as to the picturesque in designing. Some few years ago we heard a great deal of this, and it was by some advocated as an end to be attained.

The picturesque in our Royal Courts of Justice is noticeable, but I doubt if it was sought for at all by its author. It was more likely to have arisen out of the natural expression of the constructive planning, and it certainly may be asserted that in most of our old domestic work it will be found to have had its origin in the planning, in additions from time to time to suit varying wants, in the opening up of prospects, or in other natural ways. Unless it has such a natural basis it is incongruous. To distort an interior or exterior in order to get a picturesque effect is inadmissable.

Symmetry in a design, especially of a public building, is an element of great art value. Externally it contributes to the ideas of dignity and repose, and to that impressiveness due to simplicity. Internally a symmetrical plan is easy to follow, and the appreciation of the building is much enhanced if there is no irritation created in preoccupied minds by difficulty in finding one's way about. Mr. Aston Webb, at the Architectural Association, recently spoke ably on this subject. But symmetry does not mean cast-iron uniformity, or that everything is designed and set out with geometrical precision. The contrary is the case. The general effect is "ordered," so to speak; but Ruskin notes the variations in the width of piers and arches in the façades of numerous buildings which to the casual inartistic observer appear rigidly symmetrical. I will cite but the example of the Car d'Oro Palace at Venice, where there is a battlement or cresting of varying height along the front. In the happiest way the architect has given the effect of symmetry, but on analysis it will be found that the effect is produced by an unsymmetrical outline. This is but one of the æsthetic refinements of architecture where the idea is expressed without demonstration.

In like manner, as I have endeavoured to show in the earlier part of this paper, proportion is not the result of following ingenious scales of modules framed on classic examples, nor of triangles based on Gothic structures, but should be the æsthetic expression of the ability of the various parts of a structure to perform the duty imposed on them, the lower parts being necessarily more massive than the upper. It was probably a recognition of this which led Vitruvius to lay down a law that in superimposed orders, the Tuscan or Roman Doric should be at the bottom, the Ionic next, and the Corinthian above that, because the first was the most massive, the last the lightest. But this arrangement gives us a cornice to the lowest story larger and heavier than to the highest, whereas the function of a cornice to a roofed building is to throw the rain off the building, and to do this the cornice at the eaves should be larger, with more projection than any other horizontal feature of the façade, and æsthetically this arrangement is, as a rule, by far the best. Proportion must, in any living architecture, vary with the material used and with the size of the building.

The single order of the Elevation of St. Peter's at Rome may be correct by scale, but it is unreasonable in its actual position. Again we do not quarrel with the proportion of an iron column or stanchion at the Crystal Palace. It is seen to be appropriate to the material. The Eiffel Tower was formally protested against before its erection by a large number of eminent artists in France and elsewhere, but when erected, these same artists recanted their former condemnation, admitting its grace and proportion, these being evolved from the perfect expression of the functions of the material employed.

The fact is, we should concern ourselves less with the proportion of any detailed feature in a composition than with that of the broader groupings of the whole structure. Detail is interesting and important, and should be sedulously studied when we come to it, but it is not the be all and end all. That which is seen of any monumental architectural work is the mass.

Mr. Walter Crane says that a people without art are, collectively speaking, inarticulate. In other words, if I may venture to interpret him, they may be scientific; they may, like Faust, sound the depths of knowledge, or, like Newton, soar to map the heavens; but unless they have minds to achieve and create, and the faculty to appreciate emotions and ideas, they are soulless—are of this earth and not a part of the immortal. Mr. Crane adds that the most vital art is the expression of character. If that be so, and if the noblest and most enduring quality of a race is character, then architecture, among the arts, is the noblest and most enduring—that which expresses the virility of a nation.

The formation of this quality of character is closely allied to religion. I cannot here enter into the philosophy of this alliance; but, accepting religion as a great agent, there can be no question that art is a potent influence in the teaching of religion. Science deals with demonstrable truth; art, with imagination. Science tells us—very often on insufficient data, and, therefore, erroneously tells us—what is; and often will not admit anything to be which it cannot demonstrate. Art tells us that to live is the effort to be what life as defined by science is not; that if science makes anatomical sections of a man, maps his every nerve, and plans the channels of his life's stream, she has not found, and cannot find the man, the living soul which art is ever disclosing in new forms. And as religion is the great exponent of the same message, she naturally draws to her this potent ally. From the earliest days it has been so, and hand in hand they have worked together. Architecture has raised the temple expressing the ideas which her co-workers expound.

Among the arts there need be no rivalry. Architecture can mould itself in sympathy with the sculptor, and can adapt itself to the exigencies of the painter. The more massive art can accommodate herself to the less robust arts and make provision for their display to the best advantage. So let it be.

What then are the practical conclusions to draw from our consideration of this most interesting subject. They are that the possibilities of our art are great, that the responsibilities of its exponents are greater. We have cause for much rejoicing that this wonderful century is closing with bright prospects for architecture. It is more zealously and lovingly studied and expounded. Its spirit is more appreciated, not only by its ministers, but by a growing number of the public. This should rouse our enthusiasm, but although enthusiasm is good, let it not carry us away to false ideals. Avoid the cant which suggests that it is beneath an artist architect's dignity to pursue the humbler details of his studies, the scientific basis for his perfected work. Enthusiasm should spur us to labour and to study. In itself it will attain nothing. Enthusiasm for music, and a nervous horror of discord, will not enable us to compose or to perform music, nor will a similar emotion make us architects.

For us to carry the banner of our art still upward and onward needs a power to apprehend current needs, logical reasoning, much labour, courage, and technical study, as well as the environment of art works, of liberal thoughts, high ideals and aspirations, and sympathy. We must throw off the shackles of past civilisations, not ignoring but assimilating all that they can teach us, and steadily seek to create and express what is best and brightest for our own time.

In this way the position of architecture among the arts will be a high and noble one, and with its sisters, sculpture and painting, it will beautify and ennoble the people's life, and so reverse the oft-repeated but we would fain hope untrue dictum that art flourishes best in the decadence of a nation.

*** Our report of the interesting discussion which followed will appear in our next issue.

ART GALLERY, WHITECHAPEL.—The foundation-stone of the Whitechapel Art Gallery was laid on the 9th inst. in the High-street. Work has been proceeding on the building for some time. The architect of the Art Gallery is Mr. C. Harrison Townsend, whose design was illustrated in the *Builder* for May 30, 1896. The accommodation internally will be sufficient to hang about 450 pictures. The plans provide for two galleries, one on the ground, the other on the first, floor. The ground floor will be a nave like a hall with aisles, and lighted from the side. It will be 100 ft. long, and 48 ft. wide. The upper hall will be 120 ft. long by 26 ft. wide, and will be top-lighted. There will be, besides these, an annexe on the ground floor. Mosaic is largely used in the exterior.

THE INSTITUTION OF CIVIL ENGINEERS

AT the ordinary meeting of this Institution on the 6th inst., Mr. W. H. Preece, C.B., F.R.S., President, in the chair, the paper read was on "The Ventilation of Tunnels and Buildings," by Mr. Francis Fox, M.Inst.C.E.

In regard to the first part of the subject, the author enunciated the proposition that if the amount of carbon dioxide in the air of a railway tunnel did not exceed 20 parts in 10,000, then the ventilation might be deemed satisfactory. On this basis, and allowing 29 cubic feet of poisonous gas for each pound of coal consumed in a locomotive, the number of pounds of fuel consumed per mile, multiplied by 29, multiplied by 500, and divided by the number of minutes interval between the trains, would give the volume of air which must be introduced into the tunnel per minute. The ventilation of the Severn and Mersey tunnels had been determined by this rule, and had been referred to as satisfactory in the report of the Departmental Committee of the Board of Trade on the ventilation of the Metropolitan Railway Tunnels, 1897. In regard to the Mersey Tunnel, it was, however, to be regretted that, owing to the poverty of the company, inferior coal was being used, and the fans were run at a lower speed than was intended. Even with these drawbacks, however, the purity of the air in the Mersey Tunnel was well within the limits proposed by the author. The case of the Metropolitan Railway tunnels, having been the result of recent investigation, was not mentioned otherwise than to recall the fact that the amount of carbon dioxide in the air had been shown to be as much as 86 parts per 10,000. The great Alpine tunnels were next referred to. In the case of that under Mont Cenis, 8½ miles long and 26 ft. wide, the higher altitude of the middle of the tunnel above its entrances was inimical to good ventilation, and at times great difficulty was experienced in carrying on the traffic. The antiquated system at present employed was merely palliative, consisting in the injection of only 70 cubic mètres per minute of air compressed to 75 lb. per square inch, discharged at points 1 kilomètre apart throughout the tunnel. Owing to the bad ventilation, not only were the men working in the tunnel subjected to great discomfort, but the corrosion of the rails was excessive, about 300 tons having to be relaid every year. The St. Gothard Tunnel, 9¾ miles in length and 26 ft. wide, was nearly level from end to end, and, until recently, natural ventilation only sufficed; but, owing to increase of the traffic and the use of briquette fuel, the Saccardo system had lately been introduced. This consisted in blowing into the mouth of the tunnel a large volume of air which, on the principle of the injector, caused an induced current in the annular space between the interior surface of the tunnel and the gauge of maximum construction. This system had been adopted with success in the case of the Pracchia Tunnel on the main line between Florence and Bologna, the state of which was recently dangerous to human life. Experiments made by the author in this tunnel showed the following results. Before starting the fan the tunnel was filled with a dense volume of smoke from end to end, the temperature being 107 deg. F., with 97 deg. of moisture, or nearly complete saturation. With the fan running the thermometer indicated 80 deg. F. (the temperature of the external air) and the moisture was normal. The volume of air injected by the fan was 164,000 cubic feet per minute, and that by the induced current 46,000 cubic feet, making a total of 210,000 cubic feet of air per minute passing through the tunnel. It was not improbable that the Saccardo system would be selected for the ventilation of the two parallel tunnels 12¼ miles long, now being constructed under the Simplon.

In the second part of the paper the author animadverted on the inconsistency of keeping houses clean, streets swept, and sewers flushed with the object of preserving the air in a pure condition while allowing it to become absolutely foul and putrid for want of proper ventilation. Air passed through human lungs had been well designated "air-sewage." It was highly poisonous, and the breathing of it over and over again was fraught with the gravest consequences to health. It had been asserted by Dr. Ransome, F.R.S., that 70,000 deaths occurred annually in Great Britain from tuberculous disease, nearly all of which could be saved were the subject of fresh air both understood and acted upon by the community. Competent medical authority considered that the quantity of carbon dioxide in the air of rooms should not exceed ten parts per 10,000, equivalent to about 16 cubic feet per head per minute. In French hospitals 50 cubic feet per patient per minute was allowed. The author considered that 20 cubic feet per minute would be sufficient for ordinary purposes. Tables were given of the impurity in the air of schools, with different systems of ventilation, of that in dwelling-houses, and of that in sewers; from which it appeared that the latter was the least impure of the three. Proceeding to consider the ventilation of particular public buildings, the author illustrated his views by reference to special cases which had come within his experience. The fact should not be lost sight of that the air in a room might be quite cold and yet very foul; whilst on the other hand it might be warm and yet perfectly fresh. To avoid draught, the air should enter through a large number of small orifices so as to thoroughly diffuse the current. This was done by gratings, but unfortunately these seriously diminished the volume of air passing through, owing to the friction of the bars. The same remark applied to extracting flues. The author was of opinion that no large building could be successfully ventilated without some mechanical force furnished by steam, electricity, falling water, or other such agency. Then, fans could be worked with certain results, whereas automatic extractors not infrequently become inlets, thus reversing the whole system. The inlets should be by Tobin or similar tubes, about 5 ft. above the floor. In one American State Legislation building, the warmed fresh air entered on the level and in front of the desks of each member. In conclusion, the author urged the desirability of educating the public to the value and merits of fresh air.

At this meeting it was announced that twenty-six Associate Members had been transferred to the class of Members, and that 125 candidates had been admitted as students. The first ballot of the session resulted in the election of fifteen Members, seventy-two Associate Members, and six Associates.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—At the general meeting, on the 7th inst., Sir Henry Howarth, President, in the chair, Mr. C. J. Praetorius exhibited a bronze horn (now in the collection of Canon Greenwell) which was found in the Drimoleague mountains, co. Cork, and possessing the following points of interest. The horn was made by casting in two pieces, the joints being still visible. Near the mouth hole, which is situated at the side, firmly fixed in the bronze, is an iron nail, and near this a roughly scratched design. There are also certain rivet holes, the use of which has not been as yet explained. Mr. R. Garraway Rice exhibited two cast bell-metal mortars of seventeenth century date, bought in Sussex; one ornamented with four sprigs, each consisting of two leaves and a flower of six petals executed in a rough, conventional manner, which design had evidently been produced by impressing a stamp on the mould; the decoration of the other example had been done in a similar manner, the design consisting of an heraldic wreath, upon it a buck's head erased, the whole within an oval. This stamp, like that in the first example, was repeated four times. Another mortar of similar character, in the possession of the exhibitor, but with handles, is ornamented with the same stamp, which would suggest that the crest was not personal to the original owner of the mortar, and that the stamp was in common use by the founder as a means of enrichment. Mr. Rice also exhibited an oval-shaped dish of beaten copper, possibly of seventeenth century date, dug up near Morden, Surrey, about the year 1868. Mr. Charles Seidler contributed a paper on Ancient Enamelled Crosiers dating approximately from the end of the twelfth to the first half of the fourteenth centuries, made of copper and ornamented by the champleré enamel process commonly known as Limoges work. Up to the end of the thirteenth century the artist enamellers were monks and the product of their labour was dedicated to the service of the church. At the beginning of the fourteenth century, the art quitted the Cloisters and spread abroad. It is not recorded that any of these crosiers were discovered elsewhere than in France, Germany, Austria, Italy, Spain, England or Ireland. Mr. Seidler exhibited, in illustration of his paper, an album containing photographs and drawings of 119 crosiers. By permission of the authorities, Viscount Dillon exhibited some gauntlets from the Tower of London. Among them were two locking gauntlets, incorrectly called "forbidden gauntlets" and used exclusively for the tourney with blunt swords and maces; also a very rare example of a gauntlet for use at Barriers, with flanges to prevent the opponent's spear point passing between the hand and the spear. Another gauntlet of Charles I., when Prince, had a small pin on the knuckles to protect the hand from being jammed in the vamplate. A gauntlet of the so-called Essex suit was also shown in which the cuff piece suddenly became contracted so as to prevent the cannon of the vambrace pushing the gauntlet off the hand.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The third meeting of the session was held at the rooms in Sackville-street on the 7th inst. Mr. Blashill, Hon. Treasurer, in the chair. Mr. Bodger, of Peterborough, exhibited a silver penny of Offa, recently dug up in Castor Churchyard; also a styca of Canred, King of Northumbria, A.D. 808-848. He likewise exhibited some portions of tiles of elaborate pattern, with the Tudor rose, recently discovered in pulling down the Angel Hotel, Peterborough. Mr. Irvine sent for exhibition careful drawings of the leaden chalice preserved in the Chapter Library at Peterborough, and some measured drawings of the coffin lid or tombstone lately found in excavating under the diagonal buttress of the "new work" at the cathedral. A series of twenty very beautiful sepia drawings of antiquities in Boston and the neighbourhood, executed by William Brand in 1808, were also exhibited by Mr. Bodger. Mrs. Day showed some rare examples of early printed books, including a real Aldine Cicero, dated 1592. Mrs. Collier laid upon the table an interesting bronze medallion of Oliver Cromwell, and other Cromwellian memorials. The Rev. H. J. D. Astley, Honorary Editorial Secretary, exhibited on behalf of Mr. Donelly some further graphic sketches of various objects found in the Crannog, recently discovered near Dumbarton, showing the construction of the wet dock for the great war canoe, and the weird looking objects called totems, carved out of cannel coal, &c. A paper entitled "The Ancient University of Britain" was read by the author, the Rev. W. S. Lach-Szyrma, M.A. He said the question, Which is the oldest university of Britain? is one of considerable interest. Modern criticism tends to cast doubt upon the long-accepted theory that Oxford is the oldest because it derives its origin from the age of Alfred the Great, while many Cambridge men claim that their University is the elder of the two. With that question the paper was not concerned, but with a far older institution than either of them, for even before the birth of Alfred the Great there was in Britain a university some 400 years old, which, in the time of Alfred, after a long period of usefulness, and being a centre of light to Celtic Britains, had already passed its acme, and, from political causes, was verging to decay. This was the University of Llaniltyd Fawr, or Llantivet Major, as it is now called. This university was founded in the age of Theodosius II. It was burnt by Irish pirates in 440, but was restored and rebuilt by St. Iltyd. For the archæologist, Llantivet at the present day presents one of the most striking groups of British monuments—a museum, as it were, of edifices or monuments *in situ*, including a wonderful pagan British altar pillar, carved over with Celtic ornament, and with groove for the sacrificial blood, the mentier of St. Samson, the ancient crosses, and, in the churchyard, the pillar reared by King Howell in the ninth century, together with monastic ruins and foundations of college buildings, all grouped around the church and churchyard.

LAUNDRY, BLACKBURN WORKHOUSE.—Alderman Hoyle, J.P., opened on the 7th inst. the new laundry at the workhouse, which has recently been added to the institution at a cost of 3,519*l*. The building, which is of brick, faced with white stone, consists of a receiving-room, leading into a washhouse 50 ft. by 24 ft. The adjoining ironing and drying room is 50 ft. by 30 ft. A delivery room 30 ft. by 18 ft. completes the building. The machinery is driven by steam. The architect is Mr. James Aspinall, and the contractors are R. Webster, masonry and brickwork; J. Highton & Sons, joinery; P. Walsh, plumbing; Foster & Sons, Padiham, slating; and Dickenson, painting.

Illustrations.

THE PONTE VECCHIO, FLORENCE.

AS so much is being said at present in regard to the threatened demolition of old buildings at Florence, and of the Ponte Vecchio itself, it will be of interest to give the picturesque sketch of the old bridge made by Mr. J. Staines Babb, which shows very carefully the characteristic features of the structure.

In regard to the threat of its destruction, we observe that in a letter published in the *Times* of Thursday, from the Marchese Torrigiano, he denies that there is or was any intention to pull down or rebuild the Ponte Vecchio; and we may hope that this is true for the present, though we never know how far to trust official promises of this kind.

Mr. Babb, in the communication accompanying his sketch, has assumed that the Ponte Vecchio will probably be removed as a matter of necessity, and has made some suggestions as to the manner in which it should be replaced; and although these assumptions may be premature, Mr. Babb's remarks are of interest as those of a painter who is interested in architecture, and we therefore print them as sent :—

This reproduction of a traced memorandum from a water-colour drawing made by me in February, 1887, of the Ponte Vecchio, Florence, shows the main structure, with the picture gallery to the Pitti Palace, above the shops; the arched openings near the centre on the footway level; and the outgrowth of extra rooms hung up, and propped by bright red strut-poles above the Arno. It is offered here to show at a glance the nature of this picturesque bridge and its accidents of development, ere possible changes sweep them away.

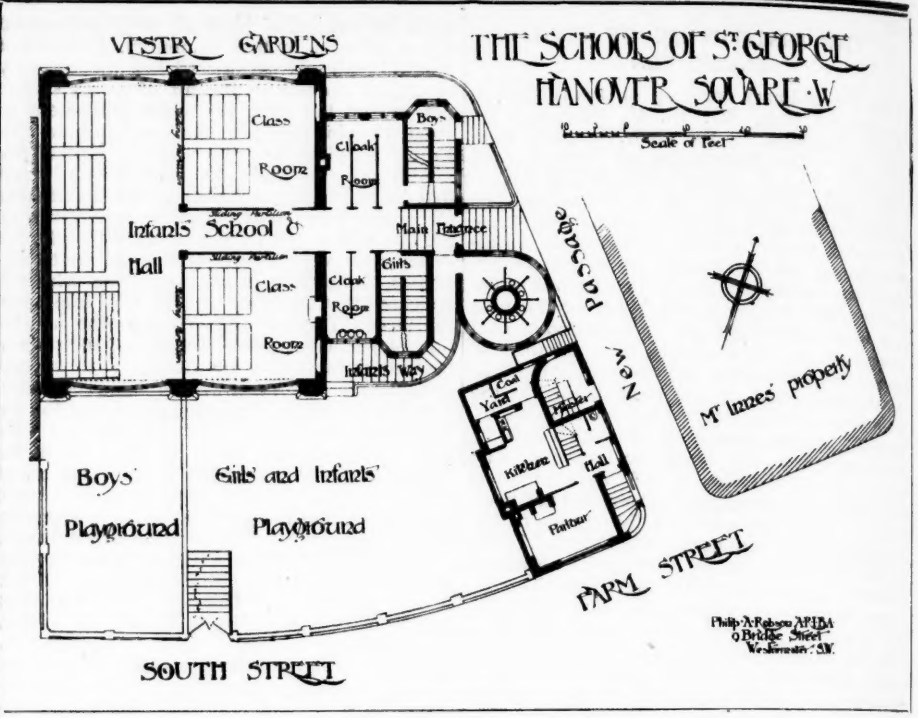
The original drawing was made on the spot, beneath the return arcade by the Ufizzi; and the view of the right-hand end of the bridge was obtained by my leaning to the outer edge of the embrasure. I felt that serious alterations might be imminent, as the repairs were about to begin. The putlog holes for the scaffolding may have been temporary, but produced a very agreeable effect. Incidental to the conjecture of its probable destruction, I thought that if the demolition of the bridge were decided on, as *absolutely necessary*, by architects of practical experience and taste, because repairs sufficient for safety, and convenience of traffic had become impossible (this dictum being regretfully accepted by us artists as a duty); the next care should be that full, measured architectural drawings (plans, sections, &c., and details with any decorations shown to a larger scale), be prepared of the whole thing as it exists, no accident of development, good or bad, being omitted; for it is a matter of history, and the drawings should be attested records in respect of their veracity. The question which naturally follows this concerns the character of the new design. And here one can only feel that the best compliment a city can pay to those artists who have produced the work we admire, but cannot any longer preserve—is to adopt the leading lines of their design and treatment, set forth afresh, in conveniently expanded dimensions for traffic and health; a glorified version, we may suppose, to delight us; as the physical excellences of a man reappear more beautiful in his healthier and happier offspring. The central feature of Florence is an integral part of her romantic history, and should be recalled in suggestion by the new bridge. Economy would be unworthy where economy must dishonour the traditions of the city's highest art. Money, in this age of mighty fortunes, could hardly be wanting, when the generosity of merchant princes all the world over had been stirred by knowledge of the facts. Surely the liberal hand and warm heart are not lacking in modern days; perhaps only a little of that loving reverence for old work well done, best shown by seeing if we can do better and more carefully.

"Les chefs-d'œuvre ne sont jamais que des tentatives heureuses; console-toi de ne pas faire de chefs-d'œuvre, pourvu que tu fasses des tentatives consciencieuses," says Georges Sand, in "François le Champ," which may be wholesomely capped by Life's whole lesson to cities and individuals, that

> "Men may rise on stepping-stones
> Of their dead selves to higher things."

One can conceive a marble bridge with an arcade and galleries above, extending the whole length of its broad footways on each side, with a roadway between these, open to the sky; the broad, plain exterior wall band made a more characteristic feature beneath the picture-gallery windows (if this were not lighted from roof above), and a vigorous external entablature carried across: treated as a deep frieze of delicate sculpture, based on the purest Greek models; the piers, wherever placed below, massive and simple if possible, forming bases to support groups of well-balanced and dignified figures in the round; a worthy object for that Italian skill and perception which never dies, and may, any day, again make the world the better by the outbreak of the hidden fire of its genius.

J. S. B.



DINING-ROOM AT THE PALACE, DARMSTADT.

THIS is a design for decorating a dining-room for the Grand Duke of Hesse's Palace at Darmstadt, by Mr. M. H. Baillie Scott, and which was exhibited at the last Royal Academy.

We have no information from the architect in regard to the work.

WEST END OF A TOWN CHURCH.

IN this study it is assumed that the site is an isolated one, at the junction of two streets. The nave towards the west terminates in a tower, and it is the west elevation of this which forms the subject of the illustration. The nave, choir, and transepts would be of a considerably lower level. Inside narrow side aisles are adopted, with galleries over, the outer wall of aisles being carried the whole height of nave.

S. K. GREENSLADE.

A STREET FRONT.

THIS is a study for a new front to an old building. Entrances for the shop and private house are placed either side of the show window, which is segmental on plan and recessed behind columns. This would give would-be customers an opportunity for inspecting goods without being hustled by passing crowds on the pavement.

S. K. GREENSLADE.

ST. GEORGE'S, HANOVER-SQUARE, HIGHER GRADE SCHOOLS.

THESE schools, situated in South-street, Grosvenor-square, W., were united with the Steuart Schools, and this year they have been rebuilt and reorganised. In 1896 a limited competition was held, and Mr. Macvicar Anderson, the assessor, placed first the plans prepared by Mr. Philip A. Robson. Owing to certain revised requirements on the part of the Duke of Westminster, who has given a considerable sum in addition to the site, these plans were not carried out, and the new scheme was designed which is here illustrated.

The plan is unique owing to peculiarities in the site, due to an amalgamation of the old and new sites, and certain concessions to improve the public ways, and cannot be elsewhere applicable. In plan and design the architect's endeavour has been not merely to convey the impression of a school building, but that of a higher grade church school.

The playgrounds are sunk and extend beneath the main building, and from the girls' playground the cookery school is approached under the teachers' houses. The principal floor is arranged for 240 infants, and the teaching rooms can easily be converted into a hall. The first floor will accommodate 180 girls, and the schoolrooms can in this case be treated as two class-rooms if desired. The second floor for boys is similar. The third floor is arranged for technical teaching. The mezzanines are utilised for teachers' rooms, committee room, book stores, general stores, &c. The sanitary tower forms an unusual feature, and is well isolated. The master's house is placed above that of the mistress, and is entirely separate from it, two floors being allotted to each. The master also obtains a way to the boys' floor across the latrines' tower.

The builders are Messrs. Dove Brothers, Islington. The fireproof flooring throughout is by Mr. C. G. Picking, Southgate, and the wood-block flooring by the Acme Flooring Company. The N. A. P. Company's windows have been used, and a special design of the architect's carried out. The sanitary work throughout is by Messrs. Adams & Co., Westminster. Messrs. Peace & Norquoy's patent swivel partitions are in use on the infants' floor. The heating is mainly by "Sunbeam" radiators (Messrs. Longden & Co.), though some "Well-fires" (Bowes' Patent) are provided in addition, and the Educational Supply Association are furnishing.

In the houses Messrs. Waygood's supply a lift, and the ranges, grates, &c., are by the Falkirk Iron Co. The hot-water supplies are by Messrs. Cannon & Sons. The door furniture in both schools and houses is supplied by Messrs. Chas. Smith & Son. The buildings are lighted throughout on Middleton's Patent Conduit System. The external walling is of a rich red brick, Portland stone, and brown glazed brick, and the roofs are covered with two colours of Broseley tiles. The cost of the buildings and furnishing is from fifteen to sixteen thousand pounds. There being no clerk of the works, Mr. Ford, the foreman, has had a responsible duty, which he has well executed.

PHILIP A. ROBSON.

BRIGHTON, HOVE, AND SUSSEX THROAT AND EAR HOSPITAL.

THIS hospital, the first portion of which has just been erected, was opened by his Grace the Duke of Norfolk on the 29th ult. The building is from the designs of Mr. Cawthorn, architect, of Brighton, and the exterior is treated with red brick and terra-cotta. The site is upon the slope of a steep hill at the upper part of Church-

street, Brighton, and the building consists of five floors. The basement contains the kitchen and service portions, the ground floor, the out-patient department. At present the hall is used by these patients as a waiting-room, and there is a consulting-room, syringing-room, minor operation-room and dispensary provided for the O.P.s. The first floor has a male ward for eight beds, and the operation theatre is on this floor, the walls being tiled and the floor of marble Terrazo paving. The female ward for eight beds is on the next floor, and there are several detached rooms to be used as separate wards, as well as nurses' rooms, &c., on each floor. The top floor receives the servants and night nurses.

THE SURVEYORS' INSTITUTION:

THE LONDON BUILDING ACT AND THE OFFICIAL SUPERVISION OF BUILDINGS.

AN ordinary general meeting of the Surveyors' Institution was held on Monday at the temporary premises of the Institution, Savoy-street, Victoria Embankment, W.C., Mr. Robert Vigers, President, in the chair.

The minutes of the last meeting having been read and confirmed, Mr. W. Weaver read a paper entitled "The London Building Act and the Official Supervision of Buildings." He was desirous, he said, of drawing attention to the London Building Act, and the manner in which it is carried out and enforced, with the view of considering the desirability of extending to London the system prevailing under the Public Health Act in the provincial towns throughout England. Recent unfortunate events in London had had the effect of directing public attention to the Building Act and its alleged shortcomings. They were aware of the many alterations made in the Bill form of the Act as the result of the consideration given to it and the very different appearance which it presents in the form of an Act, and it might be fairly assumed that even if the same amount of consideration were given to the amendment of the present Act, the resulting measure would still fall short of perfection, and afford ample opportunity for the exercise of legal acumen and expert skill in the interpretation of its provisions. He was of opinion that the remedy for the defects of the present official system of building supervision in the Metropolis must be sought, not so much in the direction of amendments to the Act itself as in the system of supervision adopted in enforcing it. During his thirty-nine years' official connexion with the parish, Kensington had developed from fields and market gardens into one of the most important districts of the Metropolis, and very exceptional opportunities had thus been afforded of acquiring practical acquaintance with the subject under consideration, not only in the particular district referred to, but in the Metropolis generally. In the report of the London County Council for 1897, it was set forth that for the purposes of the Building Act the county of London was divided into sixty-four districts, each superintended by a District Surveyor, whose duty it was to see that all new buildings and all alterations and additions to buildings "are carried out in accordance with the law." This statement was not correct, for the District Surveyors exercised no supervision outside the statutes governing their appointment. The report of the Council further stated that a standing order of the Council requires each District Surveyor newly appointed or reappointed to devote the whole of his time to the duties of his office, and not to engage directly or indirectly in private practice. Of the existing District Surveyors, forty-one could take private practice, twelve were precluded from private practice in their own districts, and the remaining eleven were, under the standing order above referred to, entirely precluded from private practice. The District Surveyors were remunerated by fees in accordance with schedules attached to the Building Act, and during the year covered by the Council's last report these fees amounted to the sum of 47,748*l.* 10s. 4d. The Council had power, under Section 158 of the Act, to substitute a fixed salary in lieu of fees, abolishing the latter and charging the salary to the County Fund. Prior to the passing of the order prohibiting private practice, the office of District Surveyor was sought, not so much for the direct income attaching to it, but for the opportunities afforded for enlarging the private practice of the official. A District Surveyor acting as architect for a building in his own district was required to give notice of the fact to the London County Council, who appointed another District Surveyor, generally from an adjoining district, to see that such building was erected in conformity with the provisions of the Building Act. After a short interval the positions were possibly reversed, and the first-mentioned District Surveyor found himself officially supervising the work of the *pro tem.* District Surveyor in *his* district. There could be no doubt that it was bad in principle for any public official to be allowed to engage in private practice in any way connected with his official work, and doubtless the London County Council acted wisely when they passed their resolution prohibiting district surveyors thereafter appointed from engaging in private practice. It was somewhat curious, however, to observe how this restriction actually worked. When a new district surveyor was required, candidates for the position were invited by advertisement, and in response applications and testimonials were sent in to the Council. Each candidate must have passed the qualifying Royal Institute of British Architects' examination; but beyond that equal gauge, the comparative merits of the candidates were assessed upon the skill and ability they had shown in the past exercise of their profession, and, in the result, an architect was appointed who had established some reputation for designing and planning buildings; and the situation did appear somewhat ironical when it was considered that the newly-appointed surveyor must no longer exercise the talents which had secured him the appointment. The man who had gained a name for designing a good elevation and getting out a clever plan was forthwith to stifle his own aspirations and inspirations, and be content with looking after the height and thickness of walls, &c., and other dry provisions of the Building Act. It was to be presumed that such self-sacrifice was loyally acquiesced in, but this castration of professional ability was for some reasons to be deplored. The training necessary for the production of a good architect was not required for and should be different from that of a building surveyor, in whose case the skill to plan and design, which was a necessity in the architect, was not so much required as a thorough acquaintance with building materials. A knowledge of strains and thrusts and of workmanship was much more desirable than expertness in the more artistic branches of the architect's profession.

In 1885, in response to an order of his board, he presented a report embodying suggestions for improving the local public work of the Metropolis. Most of these suggestions had subsequently been carried into effect by legislative enactment, but among the recommendations awaiting adoption was one for the transfer to the Local Authorities of the metropolis of the duties now discharged by the District Surveyors. He was of opinion that public benefit and administrative economy would result from the adoption of this recommendation, and he strongly urged that, in any scheme for the reform of the Local Government of the Metropolis the proposed District Councils should be entrusted with the supervision of building operations in their several districts.

The policy of the proposed transfer had received the endorsement of the Metropolitan vestries. As a result of two meetings convened by thirty-four metropolitan vestries and district boards, and held at the Town Hall, Chelsea, a memorial was forwarded on August 5, 1890, to the Prime Minister, stating, "that in the opinion of this conference the office and functions of the District Surveyor under the Building Acts should be in the hands of the Local Boards and their officers, with an appeal to the London County Council." On February 28, 1896, a conference took place between delegates from the London County Council and from the several vestries and district boards to consider, in view of contemplated changes in the government of London, what powers should be allocated respectively to the central and district authorities, and a resolution was carried similar in effect to that set forth above. The London County Council representatives did not vote on this resolution, and the Committee of the Council subsequently reported adversely to the view adopted by the Conference, and that recommendation of the Committee had since been confirmed by the full Council. On March 16, 1894, in giving evidence before the Royal Commission on the amalgamation of the City and County of London, he submitted (*inter alia*) the following statement:—

"Upon the occasion of the delegates from the Conference on the Public Health (Amendment) Bill waiting upon the Local Government Board, on June 25, 1891, the Right Hon. C. T. Ritchie stated that it was his desire and intention in the District Councils Bill, which he hoped shortly to introduce, to enlarge the scope of usefulness and responsibilities of the Local Authorities. In connexion with such statement it may be fitly asked, what duty more desirable and important can be cast upon any Local Authority than the responsibility of seeing that the buildings within its district are erected in a sound and substantial manner suitable for human occupation, with due regard to fire risks and health risks of the general community? As urged in the memorial above referred to, all such work should be vested in the Local Authority, as is the case in provincial towns. Drawings for each new building should be deposited, the intended drainage, depth of foundation, line of frontage, open spaces, water supply, and sanitary arrangements should be clearly shown. Upon the said drawings being approved, the work should be executed under the supervision of the Local Authority, and on satisfactory completion a certificate given, which could be affixed inside the building. Such certificate would be of great advantage, both to the owner of, and the individual contemplating residence in, the house. Unauthorised alteration of the drains or sanitary arrangements, when completed as aforesaid, should be punishable at law. At the present time, after a drain has been completed, tested, and passed by the vestry's officials, there is nothing to prevent the occupier or other person making, without notice, some alteration which may entirely destroy the perfection of the drain. In effecting any change on the lines hereinbefore advocated, Parliament would, of course, take care that no injustice should accrue to the present District Surveyors, and the work of the future would have to be safeguarded by precautions being taken to ensure proper knowledge and experience on the part of the officials undertaking the transferred duties. One of the risks under this head is in the case of small districts where the work is not sufficiently extensive or responsible to justify the appointment of a properly qualified man at a sufficent salary to give the whole of his time to his public duties. No public Surveyor should be allowed to practise privately; the defects of such a dual system are well known and need not be dilated on here. The above difficulty (as to small districts) may be met by uniting two or more together, so as to create districts with a population of about 200,000 each. Such an enlarged district could afford to pay for the whole time of a properly qualified surveyor or engineer, who would have no difficulty in finding ample scope for the useful employment of his skill. The work of a fairly large district can be better and more economically executed than that of a very small district, especially where the Local Authority performs its own work instead of executing it by the aid of contractors."

It was possible, of course, that some individual cases of hardship might occur, but to any one acquainted with the building work of London it must be apparent that the duties of district surveyor and parish surveyor should be discharged by one official, corresponding to the Borough Engineer and Surveyor in the towns throughout the rest of England. If the two offices were amalgamated the District Surveyor would in some parishes probably be the best man to discharge the duties of the combined office, and in other parishes the present engineers and surveyors would be fully equal to the task. At any rate, individual interest must not be allowed to stand in the way of public advantage, and if the latter demanded a change there would be no more difficulty in getting qualified engineers and surveyors for the London District Councils than was experienced in the large towns throughout the kingdom.

These points he strongly urged when reporting to his Board on the London Streets and Buildings Bill, as the following extract would show:—

"It is a bad system to have two district surveyors, one responsible to the Council and the other serving the local authority, and both going over the same ground and, to a certain extent, over the same work. The two officers should be rolled into one, responsible to the local authority, and discharging the same duties as now performed by the borough surveyors throughout the kingdom. The Vestry will understand that the suggested amalgamation of offices is not proposed in the interests of the professional class of which I am a member, but is simply made in the interest of the government of the Metropolis. Many of the District Surveyors are better qualified to undertake the work of the local surveyors than the latter are to absorb the functions of the former, but whenever such assimilation of officers does take place, properly qualified men would be appointed to each locality, and that without injustice to any present surveyor, district or local."

In support of the policy of change, he would submit the following considerations which had induced him to propose the suggested transfer of powers and amalgamation of duties under the Building Acts and Metropolis Management Acts. He was of opinion that any one desirous of developing an estate or erecting a building should be able to ascertain at the town hall of the district everything required by the public authorities relative to such building or estate. At the present time an applicant was informed on attending at the town hall that he must give the Vestry seven days' notice before commencing the excavation of foundations, and must give concurrent notice to the District Surveyor as to commencement of building operations, and submit drawings of the proposed buildings for the approval of the District Surveyor; but the Local Authority had no power to call for such drawings, the seven days' notice to them being only required in order to afford an opportunity of serving a counter notice to keep the foundations up to a certain level, so as to insure proper drainage. Should the applicant desire to develop some building land he was referred to the London County Council, to whom he must first submit (in duplicate) plans of intended roads. The County Council forward one of the copies to the Vestry, and, guided more or less by their recommendation, approve or refuse them. Having received sanction to his plan for laying out the roads, the applicant became anxious to construct sewers, and was then told to send in duplicate plans to the Vestry, who, upon approving them, forward one copy to the London County Council for their sanction. After this double reverse process, generally taking considerable time, the applicant, having succeeded in getting his plans of roads and sewers passed, proceeded to build, generally constructing the sewer first, this work being carried out under the supervision, and to the satisfaction of, the Vestry. The foundations of the buildings were then proceeded with, the Vestry surveyor attending to look after the level and frontage line. Simultaneously the District Surveyor attended to look after the foundation site with regard to the necessity for concrete and the thickness of walls and spread of footings. The attendance of the Vestry Surveyor then ceased until the house drainage work was commenced, of which seven days' notice had to be given to the Vestry, under whose supervision the whole of the work (in addition to water supply) had to be satisfactorily carrted out. In alterations to buildings and in the erection of blocks of flats, building work and sanitary work would be found progressing simultaneously, and the District Surveyor might be found looking after the proper construction of a wall, while the Vestry Surveyor was seeing to the soil-pipe attached to it. Generally speaking, in the majority of buildings, the drainage work was executed after the carcase of the building was completed, and it might be found, as in past cases, that the building, though erected in accordance with plans passed by the District Surveyor under the Building Act, did not conform to the by-laws framed under the Public Health Act by the London County Council, and enforced and supervised by the Vestry. Several such cases having occurred in Kensington, the London County Council were requested to furnish the District Surveyors with copies of the by-laws under the Public Health Act with an instruction not to approve plans submitted to them under the Building Act when such plans showed intended violations of the Council's by-laws. The Council, in reply, considered it inexpedient to give such instructions to the District Surveyors, whose duties were prescribed by the Building Acts. In consequence. at present it occasionally occurred that notice had to be served by the Vestry requiring a newly-built structure to be altered and amended in order to meet the requirements of the Coudcil's by-laws.

Further overlapping supervision and occasional clashing arose with respect to lines of building frontage and the laying out of new streets, and also in relation to arches or vaults under public ways. With regard to the former, the District Surveyor was entitled to special fees under Section 155 of the Act, and as to the latter the fees were fixed under Schedule 3, Part I., of the Act.

Concurrently with the District Surveyor's supervision of frontage lines and of the laying out of new streets, the Vestry's Surveyor was exercising similar supervision, with the additional work of setting out the levels of the new streets and their intersections. With regard to vaults under footways, the District Surveyor's duty was limited to looking after the brickwork in relation to the span of the arch, and he had no power to disapprove any work provided it fulfilled the conditions laid down in the Building Act, but the Vestry's requirements, which *their* Surveyor had to enforce, might demand fifty per cent. thicker head walls set back 2 ft. from the kerb line, backed up with concrete, with 2 ft. of space for electric, gas, and water mains, &c., left between the crown of the vaults and the paving.

Again, with regard to setting back buildings to be erected on open spaces within 20 ft. of the centre of the road, both the District Surveyor and Parish Surveyor had corresponding duties, and it occasionally happened that the former, in approving building plans submitted to him, lost sight of the fact that the abutting highway was under the full width, and the Parish Surveyor had afterwards to stop the building work in progress. If the work of the proposed new District Councils for London followed the course of procedure adopted in all other towns throughout England, these difficulties and cases of overlapping jurisdiction would not occur. In Leeds, Birmingham, Manchester, &c., by attending at the borough or town surveyor's office anyone could obtain all information necessary for his guidance in carrying out any building operations, and the advantages of this simplicity of procedure should not be denied solely to the metropolitan districts, many of which at the present time exceeded in population and rateable value most of the provincial towns possessing the advantage of self-government.

Another difficulty under the present system in London arose from the District Surveyor having no knowledge of or responsibility as to the sewers. Plans for buildings at the rear of old houses were approved by him, notwithstanding the existence of sewers running under the site of the new building, which it was illegal to erect in such position, but which, unless discovered by the Vestry within six months from completion, could not be demolished. The connexion of the District Surveyor with any new building ceased on its completion and the payment of his fees; there was no subsequent periodical inspection to detect violations of the law after the completion of the building. If such inspections were made he suspected that many infringements of the Building Act would be discovered, notably the erection of sheds and buildings in back yards, with consequent increased fire risks and reduction of air space. If the Building Act was administered by the Local Authorities the drawings of each building would be lodged with them; such drawings would show the situation and construction of the building, its drainage, sanitary adjuncts, water supply and open spaces attached to the premises, and the present officers to the Local Authorities in making their regular inspections at short intervals would be able to note any recent alterations to the premises.

As before stated the District Surveyors were remunerated by fees, out of which their assistants had to be paid, and it was unreasonable to expect the surveyor to provide and pay a body of perambulating assistants, to the serious diminution of his net income. He believed he was correct in stating that most of the cases of dangerous structures were notified to the District Surveyor by the vestry surveyor, and it must be borne in mind that the District Surveyor was not entitled to charge his fee for surveying any dangerous structure until directed by the Council to make such survey, as under Section 103 of the Act the existence of the dangerous structure must be notified to the Council before an instruction for its survey was given by them. Under the present system too much was left to chance; it was nobody's duty to find out or discover dangerous structures, and the collapse of a building might be the first intimation of its dangerous condition.

He was of opinion that no fees should be charged in respect of new buildings or dangerous structures. At the present time the supervision of drainage and sanitary work, water supply, and regular sanitary inspection were undertaken by the local authority and the expense thereof borne by the rates, and he failed to see any sound reason why one principle should not apply to the whole work of supervision.

He submitted that the interests of the community would be served by casting upon any new District Councils, to be created for the future local government of London, the duties now discharged by the District Surveyors under the London Building Acts, and that the cost of carrying out such duties should be a charge upon the general rate of each district.

Mr. Thomas Blashill, in proposing a vote of thanks to Mr. Weaver, said that that gentleman's experience was unquestioned, but he (the speaker) was not able to go far with him. Mr. Weaver thought that the Building Act was badly administered by the district surveyors, and that it would be better done by the Parish Councils; but there was an absence of clear and specific evidence in the paper in support of that view, and in place of that there was mere opinion—often interesting and valuable, but still only opinion. There was one little correction which he should like to make at once, as to the number of district surveyors who were not permitted now to carry on private practice. There were now about one-fifth who were debarred—thirteen out of sixty-five. Mr. Weaver was evidently misinformed as to the amount of private work the district surveyor carried out. There was really very little done by district surveyors in their own districts. He (the speaker) was a district surveyor for ten or eleven years, and only once or twice had he been asked to carry out a private work; and on the only occasion that he did consent he had reason to regret it, for he was put to a great deal of trouble in the matter. He was sorry that Mr. Weaver had allowed some of his views to appear in his paper, especially those as to the surveyors in adjoining districts sometimes playing into each other's hands. If Mr. Weaver meant that he thought that did happen, it was much to be regretted, and if he did not mean that, then the paragraph meant nothing. Then Mr. Weaver had something to say about district surveyors being appointed merely because of their proficiency in design. His (the speaker's) experience was that candidates based their claims to a vacant office on the strength of their knowledge of and experience in the details of construction, rather than in their proficiency in design. The idea that the training of an architect was not necessary for a district surveyor was a most fallacious one. No one but an architect could properly carry out the duties of a district surveyor and he scarcely liked to think what the parish surveyor would say if the complicated duties of the district surveyor came before him, and how that parish surveyor would shape before the Tribunal of Appeal—a body composed of three architects, one of whom was also a qualified barrister. Mr. Weaver said it was a bad system to have two district surveyors in a parish. There were not two district surveyors. There was one office of district surveyor, and one only—though it was quite true that certain Vestry surveyors called themselves district surveyors. There were two officers, but they each performed different duties, and he could not see that there had been adduced any sufficient reason why there should not be two. The statutory examination by the Institute of Architects for the office of district surveyor had been alluded to by Mr. Weaver in a rather light and airy fashion, who said, apart from that, what qualification had the district surveyor? But that was the real qualification, for it showed that he was qualified to perform his duties. One of the benefits of the present system was that the district surveyor was an independent officer, and that he need not be influenced by any one. The same could not be said of the parish surveyor, even in the large parishes, to say nothing of the smaller, and he knew of cases where the parish surveyor had been afraid to carry out his duties properly. As to dangerous structures, he had taken some trouble to look into the matter and he had come to the conclusion that the parish surveyor was not able to look after dangerous structures, while the district surveyors were qualified by experience. As to fees, he differed from Mr. Weaver there. Why should the builder not pay them? The fees were a charge upon the building. This applied particularly in the case of dangerous structures, for why should the owner of the nuisance escape scot free? If the parish surveyor had the duty of looking after dangerous structures and other matters thrown upon them, they would have a very unpleasant duty to perform, and, what was more, they would not have the consolation of the fees which the district surveyor now received.

Mr. Alex Payne, in seconding the vote of thanks, said that from first to last there was hardly a word in the paper that he agreed with. The paper seemed to be an attempt to muddle up two totally different appointments—appointments which required absolutely different training, and in which there was absolutely different work. The parish surveyor was usually a C.E., and already had most important duties to perform, and he could not see any necessity for adding to those duties. Those duties had nothing to do with the carrying-out of the Building Act, which could only be properly done by an architect; and in support of that view he quoted from the Act itself, from Section 78, dealing with public buildings, Section 5 (27) (definition of public buildings), and other sections. How could the absolute control of all these buildings be properly placed in the hands of anybody but an architect? If the parish surveyor had those duties put upon him, he would be almost compelled to relegate them to architectural assistants, though they were far too important to be so relegated. Then there were the legal duties. The district surveyor had to enforce the Building Act by attendance at the law courts—the London County Council furnishing legal aid where necessary. Would the parish surveyor be able to do this, and would each vestry employ a staff of legal assistants? Then public and other important buildings were generally designed by architects, and what would they say if they had to submit those designs to some one whose training had not been an architectural one? Mr. Weaver asserted, without giving any evidence of it, that the present system of supervising buildings was a bad one, though he thought it was not the fault of the law, but the way the law was carried out; but let them think of the immense amount of work that had been carried out in the metropolis under the Building Acts in the last fifty years, and how few, comparatively, had been the accidents. He quoted the opinion of Dr. Longstaff, given some time since, that serious building accidents had been almost unknown in London owing to the skill of the officers who surveyed under the Dangerous Structures clauses; and of Sir John Hutton, lately expressed at the Council, that district surveyors were above suspicion, and did their work most efficiently, and thought these opinions showed the value of the sweeping assumptions of the author to the contrary. As for the assertion that the office of district surveyor was sought after by architects in order to increase their private practice, it amounted to saying that two or three hundred men, many of some eminence, including some of the Presidents of the Royal Institute of British Architects, had taken the office under false pretences. He gave his most unqualified denial to that. How was the author to know what the motives of those who had sought this office were? District surveyors had been appointed under this system for about fifty years, and during that time, as far as he knew, there had hardly been a case of corruption, or anything of the kind, and that was saying a good deal, when it was considered how much and how important work had been supervised during that time; but he thought the temptation to partial carrying out the law would be greatly increased if they were subordinate officers under the Vestry; which is what the proposals in the paper amounted to. He himself believed it was a mistake to debar a district surveyor from private practice as an architect. He believed the condition had been made in recent appointments by the Council with the very best intentions. The author said the objection to practising architects were so well known they need not be stated; but, he asked, what were they? It had been urged that in some cases practising architects were too busy to attend to the duties, but such cases had been so few as to show the fault was in the individual and not in the system, and if it was found that a district surveyor was not giving proper attention to his duties he could always be asked to resign. The author had suggested dividing districts up by population—say of 200,000 each—doing away with fees, and paying a salary chargeable on the rates. This would be throwing part of the cost of building on the ratepayer; besides, a district with a small population, if containing building land, would often give much more work to the surveyor of buildings than a populous district, and there would be no sort of relation between the pay and the work. The author stated that his object in proposing these changes was to raise the status of the parish officials. Was it worth while, for such an object, to throw over a system which had worked as well as the present one had for half a century, and to start a crude experiment and place important duties in the hands of men unqualified for them by training and experience?

Mr. W. Woodward said that the previous speakers had misunderstood the paper. Mr. Weaver had never proposed the substitution of the Vestry surveyor for the district surveyor, nor had he said that the work of the District surveyor had been badly done. What he did suggest was an entirely new order of things—the establishment of a central body in the different districts, and the appointment to such body of an intelligent and skilful official.

Mr. H. H. Collins said that he differed from Mr. Weaver from beginning to end of the paper. He regretted that the paper had been written, and especially that so many innuendos were made in it. The title of the paper was a misnomer; it should have been: the desirability of transferring the duties of district surveyors to local authorities. The paper seemed to be the outcome of the unfortunate accident at Westminster; but that really had nothing to do with the question at issue, for what that accident showed was that the District Surveyor and the County Council took an erroneous view as to their powers under the Act. He very much regretted that Mr. Weaver had made certain remarks about district surveyors, and in that connexion he would like to mention the following names of those who had held, or were holding, such office:—the late Professors Donaldson and Cockerell, Professors Kerr, Banister Fletcher, Roger Smith, Mr. Alex. Peebles, late City Architect; the late E. I. Anson, Past-President of the Institute of Architects; Thomas Edward Wyatt, Charles Fowler, and Douglass Mathews. Could the innuendo in the paper possibly apply to such men? The speaker then referred to the action of the Institute of Architects, the Surveyors' Institution, the Institute of Builders, the Land Owners' Association, and the Duke of Westminster, all of whom had impressed on Parliament the necessity of upholding the present status of the District Surveyor in the public interest. Surely these were the proper people to express an opinion in this matter. Neither architects, surveyors, nor builders had made any complaints. And why should there be any alteration? He failed to see why. He thought it was desirable to adhere to the present system, which gave them men of erudition—men who understood building matters and who had a thorough appreciation of the art side too. The functions of the District Surveyor were perfectly well understood and appreciated, and he did not see what more was required. He did not think that Mr. Weaver's views would get much sympathy from them, and he desired to move the following resolution: "That this meeting of the Surveyors' Institution does not agree with the views or conclusions expressed in Mr. Weaver's paper, entitled 'The London Building Act and the Official Supervision of Buildings.'"

The Chairman said the resolution was unnecessary, as the Institution was in no way committed to Mr. Weaver's views.

Mr. Douglass Mathews then moved, and Mr. H. Lovegrove seconded, the adjournment of the discussion.

This having been agreed to, the meeting terminated.

The next meeting will be held on January 9.

ARCHITECTURAL SOCIETIES.

THE GLASGOW ARCHITECTURAL ASSOCIATION.—At the usual monthly meeting of this Association, held in the Rooms, 187, Pitt-street, on the 6th inst., Mr. Geo. S. Hill in the chair, Mr. John Watson contributed a paper entitled "Domestic Architecture." Mr. Watson confined himself to a general view of the types of building which went to form the suburbs of large cities. He traced the existing styles of plan to the class of material used, prejudices arising mainly from economic causes. Mr. Watson showed by a large number of illustrations how different this class of building could be made if architects were but willing to adopt the many different materials which lay to their hands. This would in turn lead to improved types of plan and style of building generally.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—The ordinary monthly meeting of this Society was held on the 13th inst., at the School of Art, Mr. R. W. Fowler, President, in the chair. It was announced that the Council had arranged a series of lectures for the New Year by Mr. Hugh Stannus. Mr. Beresford Pite gave a lecture on "Michelangelo's Architecture." He said that the accepted verdict of architectural historians and critics was that Michelangelo's influence was detrimental to architecture. He then enlarged upon the extent and reasons of Michelangelo's influence, the great architect's mastery of the arts of design in sculpture and painting, and the noble character of his intellect. The importance of St. Peter's at Rome was emphasised. Imitative followers without his powers or opportunities came after him. His practical faith in the unity of art was evidenced in his work in the three directions of sculpture, painting, and architecture. There were the Madonna in San Lorenzo, in Florence, and the Pieta in St. Peter's in sculpture, and the figures of the ceiling of the Sistine Chapel in painting, which were instanced as having a basis of constructive design, and expressing ideas of scale, grandeur, breadth, and dignity of line in composition. Those qualities also existed in Michelangelo's architectural designs. The lecture was illustrated by drawings, photographs, and engravings. A vote of thanks was given to the lecturer, on the motion of Mr. C. M. Hadfield, seconded by Mr. C. J. Innocent, and supported by Messrs. E. M. Gibbs and the Chairman.

DUNDEE INSTITUTE OF ARCHITECTURE, SCIENCE AND ART.—The Council of this Institute held a conference with the architectural pupils and assistants in Lamb's Hotel on the 10th inst. to discuss the advisability of forming a students' section of the Institute. Mr. Charles Soutar, as Secretary, along with a Committee consisting of Messrs. Haxton (St. Andrews), Cullen, Dakers, and Marshall, were appointed, along with the Council of the Institute, to organise the section and arrange a syllabus of excursions, design classes, and lectures.

NORTHAMPTONSHIRE ARCHITECTURAL SOCIETY.—A meeting of the Committee of the Architectural Society for the Archdeaconries of Northampton and Oakham was held on the 12th inst. at the rooms of the Society, Abington-street. Sir Henry Dryden, Bart., presided. Mr. Harold Scrivener, architect, Gayton, was elected a member of the Society; and Mr. Markham presented the Society with two books one "Chaffers' Handbook to Hall Marks on Gold and Silver Plate," and the other "Markham's Handbook to Foreign Hall Marks on Gold and Silver Plate." Subsequently the annual meeting was held. The officers were re-elected, and Mr. Markham then presented the annual report, which showed a slight decrease in the membership. During the year the Society had been consulted as to the restoration of various churches, and the Rev. A. K. Pavey had been elected joint hon. secretary with Mr. Markham. The report was adopted, as well as the report of the Rev. E. L. Tuson, the hon. treasurer. Mr. T. Shepard then read a paper on "The Heraldry of Abbey and See and Cathedral of Peterborough," while Mr. E. A. Treen read a paper on "Barby Manor and Church." Mr. Shepard and Mr. Treen were thanked for their papers.

COMPETITIONS.

AGECROFT CEMETERY COMPETITION.—Numerous inquiries having been made as to this competition, we are authorised to state that twenty-two sets of plans were sent in but have not been opened, pending the receipt of sanction to use the land for cemetery purposes. This has been delayed owing to the opposition raised by the local authority in whose district the site is situated. The Home Office inspection of the land was made as long ago as July 15 last.

THE REBUILDING OF THE OLD BAILEY.—The City Corporation determined on the 8th inst. to retain the services of Professor Aitchison, President of the Royal Institute of British Architects, in connexion with designs for the rebuilding of the Old Bailey, at an honorarium of 400 gs. Mr. Baddeley said the advertisements for the plans for the rebuilding of the Old Bailey would, he hoped, be out early in January, and he trusted that there would be little further delay in the matter.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, Mr. McKinnon Wood, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend the Hammersmith Vestry 11,020*l.* for electric lighting purposes; Newington Vestry 10,000*l.* for electric lighting purposes; the St. Giles District Board 17,160*l.* for the purchase of land; and the Wandsworth Guardians 3,000*l.* for alterations and additions to the workhouse.

The Works Department.—The Finance Committee submitted the half-yearly statements of works executed by the Works Department up to September 30, 1898. The Lewisham main sewer has been constructed at a cost of 22,924*l.* above the final estimate. For the total half-year's returns of works there was a balance of cost above final estimate of 21,000*l.*, and since the establishment of the Works Department a balance of 40,866*l.* above the final estimates; but the loss appears to have been incurred during the late management. The total amount of jobbing works show a balance below schedule value of 6,185*l.* The consideration of the question was adjourned.

Locomotives Act, 1898.—It was agreed *(a)* that the Highways Committee be authorised, until the Council shall make a further order on the subject, to act on behalf of the Council in relation to all matters arising under the Locomotives Act, 1898, which comes into force on January 1, 1899; *(b)* that the Council, in the exercise of its powers under Section 14 of the Locomotives Act, 1898, do, until further order, authorise Sir A. R. Binnie, its Chief Engineer, to deal on behalf of the Council with all applications under Sections 1 and 3 of the Act, and to give or withhold, at his discretion, the permission or consent required as regards matters specified in those sections.

The Housing Question.—Some discussion took place upon a report by the Housing of the Working Classes Committee, with reference to the erection of working-class dwellings on land known as the Cotton-street site, Poplar. A proposal to sell the ground for the erection of dwellings had been rejected, and the Committee found themselves unable to build on the land without incurring a charge on the rates. They now asked the Council to agree that no further action should be taken with regard to building on the site.

An amendment by Mr. Dickinson was adopted to the effect that the recommendation should be referred back to the Committee, with an instruction to see whether plans could not be prepared for erecting dwellings upon the site which should not involve any charge on the county rate.

The Widening of Parliament-street.—The Improvements Committee recommended, and it was agreed, that the estimate of 12,000*l.* submitted by the Finance Committee be approved, and that, in connexion with the widening of Parliament-street and Charles-street now being undertaken by H.M. Office of Works, the Council do contribute on the usual conditions the sum of 12,000*l.* in respect of the making up of those two thoroughfares.

The Water Question.—The Report of the Parliamentary Committee dealing with the Council's water Bills was submitted. It was sought to obtain the consent of the Council to promote the various Bills in connexion with the Council's scheme for acquiring the London Water Companies and for bringing water from Wales. The report was agreed to.

New Theatre (Cambridge Circus).—The Theatres Committee brought up the following paragraph, the recommendation being agreed to:—"We have considered eight drawings, dated December 3, 1898, of a theatre which it is proposed to erect on a site at Cambridge Circus with frontages to Shaftesbury Avenue, Little Earl-street, Tower-street, and West-street, with a 10 ft. passageway from Tower-street to West-street. The site does not comply with the Council's regulations, as half of the total length of the boundaries of the site does not abut upon public thoroughfares, of which none are less than 30 ft. wide. We therefore recommend that the eight drawings be not approved."

Blackwall Tunnel Conveniences.—The Bridges Committee brought up the following report, the recommendation being agreed to:—

"Messrs. Doulton & Co. have informed us that they desire to withdraw their tender of 1,891*l.* 15s. for the Blackwall Tunnel conveniences as, owing to an error, they have under-estimated the value of the work. They state that they would be prepared to carry out the work at an increase of 15 per cent. on their tender. In consequence of this withdrawal, we asked the Works Department at what price they were prepared to carry out the work. The manager reported that his original estimate for the work was made in July last, and amounted to 1,980*l.*, but since that date the prices of certain materials have gone up, viz., bricks 4s. per 1,000, cement 5s. 9d. per ton, steel joists 20s. per ton, stonework 1s. 3d. per foot cube, and brass work 5 per cent. The total increase amounts to 96*l.*, which makes his estimate 2,056*l.*, for which sum he is prepared to do the work. Messrs. Doulton's revised price amounts to 2,175*l.* 10s. Under the circumstances we think that the work should be entrusted to the Works Department. We therefore recommend—(*a*) That the resolution of the Council of November 29 last, accepting the tender of Messrs. Doulton & Co. for the construction of public conveniences at the northern entrance to the Blackwall Tunnel, be not acted upon; (*b*) That the Council do sanction an expenditure of 2,056*l.* for the construction of conveniences at the northern entrance to the Blackwall Tunnel; that the works be carried out at that estimated cost by the Council, without the intervention of a contractor, and that the drawings, specification, and bills of quantities be referred to the manager of works for that purpose."

Legal Proceedings.—The Building Act Committee recommended, and it was agreed, (1) "That the solicitor do take all necessary steps for upholding before the High Court the decision of the magistrate in the proceedings taken by the Council with reference to the building erected by the South Metropolitan Gas Company in their yard at Rotherhithe-street at less than the prescribed distance from the centre of that street." (2) "That the solicitor do take all necessary steps for upholding before the High Court the decision of the magistrate in the proceedings taken by the Council with regard to the wooden structures erected by coal merchants in the Great Central Railway Company's depot, at Carlisle-street, Marylebone."

The Tramway Manager.—Mr. Alfred Baker, manager of the Nottingham Corporation tramways, was appointed manager of the Council's tramways in the place of Mr. Young, who declined the position.

The Strand Improvements.—A long discussion took place with reference to the London Improvements (Holborn to Strand, Southampton-row widening, High-street, Kensington, and other works) Bill. An amendment was moved and seconded to the recommendation providing that the interest on sums paid for purchasing properties and generally for effecting improvements should, for the first few years before the completion of the improvement, be treated as part of the expenses payable out of the money borrowed and provided accordingly. The amendment was lost and the Bill approved.

Competitive Designs for Dust Carts.—The Public Health Committee recommended the Council to issue an advertisement offering a premium of 25*l.* for the best design of a dust-cart and cover, and that Sir Douglas Galton be asked to adjudicate. This was agreed to.

The Council adjourned soon after seven o'clock.

APPLICATIONS UNDER THE 1894 LONDON BUILDING ACT.

AT the meeting of the London County Council on Tuesday, the Building Act Committee brought up the following list of applications under the London Building Act, 1894. Those applications to which consent has been given are granted on certain conditions.*

Lines of Frontage.

Greenwich.—An iron and glass shelter at the entrance to the Parthenon Music Hall, on the east side of Crooms-hill, Greenwich (Mr. W. Hancock for Mr. A. A. Hurley).—Consent.

Hampstead.—A porch and angle turret to proposed residential flats on the north side of Sumatra-road, West Hampstead, at the corner of Sandwell Crescent (Messrs. Palgrave & Co. for Mr. G. A. Clements).—Consent.

St. George, Hanover-square.—Inclosure of the sides and front of the portico at No. 59, Belgrave-road, Pimlico (Mr. W. H. Hewish for Miss Tennant).—Consent.

St. Pancras, North.—Buildings on the west side of Highgate-road, St. Pancras, between Greenwood-place and Carker's-lane, with a one-story building in front of the building next Highgate-road, and the widening of parts of Greenwood-place, Carker's-lane and Highgate-road (Messrs. Maple & Co., Limited).—Consent.

Wandsworth.—Houses with one-story shops on the site of The Hawthorns and grounds, on the west side of Balham High-road, at the corner of Marius-road (Mr. F. Perks for Mr. R. Simpson).—Consent.

Woolwich.—Two-story bay windows in front of twenty-two houses on the south-west side of Brewer-street, Woolwich (Messrs. Church, Quick, & Whincop for Mr. H. H. Church).—Consent.

Hampstead.—A one-story studio addition to St. André's Villa, Mortimer-road, West Hampstead (Mr. L. Littlewood).—Refused.

Islington, East.—A one-story shop at the side of No. 368, Essex-road, to abut upon Ockenden-road (Mr. E. A. E. Woodrow for Mr. W. Jay).—Refused.

St. George, Hanover-square.—Erection and construction in glass and iron of a conservatory with bath-room over, on the porch at No. 2, Upper Belgrave-street, to abut upon Chester-street (Messrs. G. H. Morton & Son for Lady O'Hagan).—Refused.

Wandsworth.—That the Council do make no order with reference to the application of Messrs. J. Whittaker & Co., for consent to the erection of a one-story office at Knight's Hill, coal depot, Rosendale-road, Dulwich.—Agreed.

Width of Way.

Bow and Bromley.—A building on the east side of St. Leonard-street, Bromley-by-Bow (Mr. R. T. Kingham for the London General Omnibus Company, Limited).—Consent.

Dulwich.—A house on the western side of Underhill-road, Camberwell, to flank upon a footway leading from Underhill-road into Overhill-road (Mr. J. Watt).—Consent.

Rotherhithe.—Three-story stables on the east side of Stoney-lane, and also on the west side of Vine-street, Rotherhithe (Messrs. Newman & Newman, for the proprietors of Hay's & Cotton's wharves).—Consent.

St. Pancras, East.—A two-story stable and coach-house in the garden at the rear of No. 160, Camden-road, St. Pancras, to abut upon Camden-mews (Mr. A. Bell).—Consent.

Woolwich.—Buildings and forecourt boundaries in parts of Union-street and Union-buildings, Powis-street, Woolwich, at less than the prescribed distance from the centre of the road (Mr. H. P. Monckton & Messrs. Church, Quick & Whincop, for their respective clients, Captain R. A. Ogilby, the freeholder, and Mr. H. Wright, Mr. H. H. Church, Mr. S. H. Cuff, and Messrs. Sanders & Webber, the leaseholders of the property).—Consent.

Woolwich.—Widening of parts of Union-buildings and Union-street, Powis-street, Woolwich (Mr. H. P. Monckton and Messrs. Church, Quick, & Whincop for their respective clients, Captain R. A. Ogilby, the freeholder, and Mr. H. Wright, Mr. H. H. Church, Mr. S. H. Cuff, and Messrs. Sanders & Webber, the leaseholders of the property).—Consent.

Chelsea.†—Stable buildings on a site between Nos. 39 and 40, Ridley-street, King's-road, Chelsea (Mr. J. J. Connelly).—Refused.

Hampstead.—That Mr. H. Marnham be informed that his application for a modification of the conditions attached to the Council's consent of December 20, 1897, to the erection of a two-story building on the west side of Streatley-place (formerly Brew-house-lane), Heath-street, Hampstead, so far as relates to a proposed inclosure of the land dedicated to the use of the public, having been fully considered, the Council have resolved to adhere to the decision of December 20, 1897, upon the application.—Agreed.

Islington, West.—A factory on the west side of Eden-place, Eden-grove, Holloway (Messrs. Truefitt & Watson for the Star Brush Company, Limited).—Refused.

Rotherhithe.—A one-story building on the east side of Tulip-place, New Church-street, Bermondsey (Mr. W. Freeman for Messrs. Mackey, Mackey, & Co., Limited).—Refused.

Woolwich.†—An addition to the Woolwich Theatre, at less than the prescribed distance from the centre of Rope-yard-rails (Mr. F. Matcham for Mr. S. Barnard).—Refused.

Poplar.—That the Board of Works for the Poplar District be informed, in reply to their letter protesting against the action of the Council in consenting to the erection of a dwelling-house on the west side of Cottage-street, Poplar, to abut upon Finch-court, as shown upon the plan deposited by Mr. J. Fox, notwithstanding the fact that the Board were of opinion that the application should not be granted, that after full consideration of the representations made by the Board with respect to the subject, the Council in the exercise of its discretion saw no reason to object to the erection of the house in question, and cannot agree with the Board that a decision has been arrived at in this case to which exception could properly be taken.—Agreed.

Open Space about Building and Widening of Street.

St. Pancras, South.—A modification of the provisions of the London Building Act, 1894, with regard to open spaces about buildings, so far as relates to the two houses, with shops on the ground floor, on the site of No. 27, Tottenham Court-road, and a portion of No. 13, Stephen-street, St. Pancras, without an open space at the rear of the new houses, and widening of a part of Stephen-street (Mr. P. Dollar for Viscount Gort).—Consent.

* Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Width of Way and Deviations from Certified Plans.

Bermondsey.—That the Council do, in the exercise of its powers under Section 13 of the London Building Act, 1894, consent to the position proposed to be adopted in the rebuilding of the "Royal Fort" public-house, No. 131, Grange-road, at the corner of Fort-passage, and that sanction be given to certain deviations from the plan certified by the District Surveyor under Section 43 of that Act, so far as relates to the rebuilding of the premises (Mr. C. H. Flack for Mr. R. Ireland.—Consent.

Open Spaces about Buildings.

Islington, North.—A variation from the plan approved on December 21, 1897, for the rebuilding of the "Boston Arms" public-house, Junction-road, at the corner of Dartmouth Park-road, with an open space at the rear (Mr. G. J. Thorpe for Mr. W. Lewis).—Consent.

Deviation from Certified Plans.

Holborn.—Certain deviations from the plan certified by the District Surveyor, under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "William the Fourth" public-house, No. 10, Beauchamp-street, Leather-lane, Holborn (Mr. M. T. Saunders for Reid's Brewery Company, Limited).—Refused.

Islington, East.—Certain deviations from the plans certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of the "King's Head" public-house, No. 126, Blackstock-road, and two two-story cottages on the west side of Monsell-road, Islington, at the rear of the public-house (Mr. F. Waghorn for the Camden Brewery Company, Limited).—Refused.

Line of Fronts and Width of Way.

Battersea.—A two-story building on the west side of Ford's-place, Church-road, Battersea (Mr. A. C. Forrester for the Morgan Crucible Company, Limited).—Consent.

Chelsea.—Additions to Christ Church, Christ-church-street, to abut also upon Caversham-street (Mr. J. A. Reeve for the Vicar and churchwardens of the church).—Consent.

Bow and Bromley.—A building upon the site of Nos. 76, 78, and 80, Ford-street, Bow (Messrs. Holman & Goodrham for Messrs. Johnson Brothers).—Refused.

Strand.—An iron and glass shelter in front of the Loudoun Hotel, Surrey-street, Strand (Messrs. Ventom, Bull, & Cooper for the Loudoun Hotel, Limited).—Refused.

Width of Way and Temporary Building.†

Hoxton.—A wooden store shed erected in the brewery yard on the north side of Bacchus-walk, Hoxton, at less than the prescribed distance from the centre of the road (Mr. C. R. Winter for the Hoxton Brewery Company, Limited).—Consent.

Formation of Streets.

Haggerston.—That an order be issued to Mr. B. Crewe, sanctioning the formation or laying-out of a new street, for foot traffic only, to connect Cotton's-gardens with Hudson's-court, Kingsland-road, Shoreditch (for Mr. J. Weibking). That the name Cotton's-gardens (in continuation) be approved for the new street.—Agreed.

Fulham.—That an order be issued to Mr. R. Groom, sanctioning the formation or laying-out of proposed new streets for carriage traffic on part of the Peterborough Estate, on the south side of New King's-road, Fulham (for Mr. A. N. Smee). That the name Studdridge-street (in continuation) Chipstead-street, Bradbourne-street, Chiddingstone-street, and Quarrendon-street be approved for the new streets.—Agreed.

Lewisham.—That an order be issued to Mr. A. Sykes, sanctioning the formation or laying-out of two new streets for carriage traffic, to lead out of Woolstone-road into Vancouver-road, Forest Hill (for Mr. G. Badman). That the names Kilmorie-road (in continuation) and Elsinore-road (in continuation) be approved for the new streets.—Agreed.

Greenwich.—That an order be issued to Mr. J. Ellis refusing to sanction the formation or laying out for carriage traffic of a new street to lead out of Cedar-grove into Woolwich-lower-road, Charlton. That the solicitor do continue the proceedings directed to be taken in the matter.—Agreed.

Wandsworth.—That an order be issued to Messrs. Tompkins & Barker refusing to sanction the formation or laying out for carriage traffic of a new street on the Woodlea estate, on the eastern side of Bedford Hill-road, Balham.—Agreed.

Cubical Extent.

Poplar.—Erection at London-yard Manchester-road, Cubitt Town, Poplar, of an addition to a building of the warehouse class, such addition to exceed in extent 250,000 but not 450,000 cubic feet, and to be used only for the purposes of the manufacture of machinery and boilers for steam vessels (Messrs. Bradshaw, Brown, & Co., for Messrs. Yarrow & Co., Limited). Consent.

Recommendations marked † are contrary to the views of the Local Authorities.

LONDON BUILDING ACT, 1894.

THE TRIBUNAL OF APPEAL AND SECTION 29.

THE Tribunal of Appeal under the London Building Act, 1894, sat at the Arbitration Room of the Surveyors' Institute, on Wednesday, to hear an appeal made by Messrs. William Seaman and Harry Guest (by their solicitors, Messrs. Underwood, Son, & Piper) against the certificate of the Superintending Architect of the London County Council, dated November 19, 1898 (under Section 29) by which he certified that the building specified on the plan "is situate in the street called Bravington-road, Harrow-road, which street is shown on the same plan; and that such building is also situate in the street called Mozart-street, which street is also shown on the said plan."

The members of the Tribunal sitting were Messrs. Arthur Cates (chairman), A. H. Hudson, and Penfold.

Mr. G. A. Scott, barrister, appeared for the appellant, and Mr. Seager Berry, from the Building Act Department of the London County Council, for the respondent.

Mr. Scott, in opening the case for the appellant, remarked that the fact that the members of the Tribunal had personally inspected the site in question would very much simplify his task of presenting the facts to them. Mr. Seaman, he explained, entered into a contract so far back as May 26, 1886, for the development of the estate belonging to the Neal family, the present freeholder being Sir Algernon Neal. The plans attached to the contract were all passed by the Metropolitan Board of Works, then existing. It was now proposed by Mr. Seaman to complete the buildings there provided for by erecting the corner house at the junction of Bravington-road and Mozart-street. A serious question affecting the building line arose, however, and police-court proceedings ensued. The result of these was that the magistrate adjourned the summons *sine die*. Thereupon the London County Council served a notice upon the appellant to appear before the Superintending Architect under Section 29 of the Act to decide whether the site in question was situate in Bravington-road or not. The Superintending Architect was thus in the position of having to reconsider his own decision. He did this by deciding that the premises were situate in both streets and his certificate to this effect was that against which they now appealed. He (Counsel) had some confidence in asking the Tribunal to decide that the Superintending Architect was mistaken, in support of which he would cite the case of Barlow *v.* the Vestry of St. Mary Abbots, Kensington, and the remarks of Lord Herschell in his judgment in that case tried in the House of Lords. Briefly what was laid down there was that such cases should be decided on the circumstances. Although the duty of the County Council was to see that public rights were not infringed, no reasonable man could on the facts of this case believe that any individual was attempting to do so; on the contrary, he ventured the opinion that the interests of an individual citizen were being overridden by the so-called protectors of the public interests.

Mr. Seager Berry raised the question as to whether the date of the contract did not place the case outside the Act of 1894.

Mr. Scott submitted that the contract could not in the face of the Superintending Architect's, certificate, be taken into consideration except as a contribution to the facts.

The Chairman ruled that all they had to deal with was the certificate of the Superintending Architect.

The appellant, Mr. William Seaman, and Mr. Edward Vigers, architect to the freeholders of the estate, having briefly given evidence,

Mr. Seager Berry asked the Tribunal to uphold the Superintending Architect's certificate on the ground that the building was, under the Act, situate in both streets. The argument as to the hardships the appellant would suffer were rather more suitable to advance on an application for consent to advance on the line. For many years in London the idea existed that a corner erection was only bound by the building line in one street. Since 1886, however, when the De Vere Gardens case came before the House of Lords, it had been consistently laid down that the building was bound by the general building line in both streets. Case after case that had been decided supported this view. Among them being Gilbert *v.* Wandsworth District Board of Works (*Law Times*, N.S., vol. 60, p. 149); Warren *v.* Mustard (*Solicitors' Journal*, November 21, 1891); the London County Council *v.* Lawrence (Justice of the Peace, September 30, 1893); the same *v.* Cross (*Solicitors' Journal*, vol. 36, p. 414, and p. 486 in the Court of Appeal); and the same *v.* Pryor (Justice of the Peace, April 4, 1896, p. 215, Divisional Court). The meaning of Section 29 exactly coincided, he contended, with the view he advanced.

Mr. Scott, in reply, argued that to say that because a corner house was physically situated in two streets it was the same under the Section, was a *reductio ad absurdum* of the whole scheme of the Legislature. What he contended was that each case must be decided on its merits.

Eventually the Chairman announced that the Tribunal dismissed the appeal with costs, remarking that they felt bound to do so on the facts.

NEW GYMNASIUM AND WORKSHOPS, BOROUGH POLYTECHNIC.

THE latest addition to the Borough Polytechnic is a block of building containing upon the ground floor a gymnasium, 82 ft. by 36 ft., with a running track, 6 ft. 9 in. wide, forming a gallery round and supported upon cantilevers. The gymnasium is arranged as a public hall with the necessary exits and staircases, and a licence has been obtained from the London County Council for music, &c. The floor is laid with wood blocks in solid fireproof construction, and the hall is covered in with an open roof and lanterns in Oregon pine. Adjoining the gymnasium and gallery are the leaders' and teachers' rooms and locker rooms, all fitted with shower-baths and water-closets, &c. These rooms will be available for artists when the hall is used as a concert-room.

The basement is appropriated to four workshops and a model bakery with lavatory accommodation. The workshops are 26 ft. by 20 ft. each, 13 ft. high in the clear, and well lighted and fitted with the various appliances for the trade to be taught. The bakery is 36 ft. by 24 ft., fitted with the latest and most modern appliances in ovens and bakery machinery, the necessary power being supplied by an electric motor. The walls are faced upon the inside with Fletton bricks and distempered, excepting the bakery, where the dados, &c., are formed in Opalito, as being more cleanly.

Extensive alterations and additions have also been made to the old buildings, resulting in the addition of a cookery school, a physics lecture theatre, laboratory and research rooms, with boiler and engine rooms in the basement.

The cookery school is a room 38 ft. by 23 ft., with open timber roof and lantern, with gallery and desks at one end, and is fitted with two gas stoves, kitchener for use of coal, and an ordinary hub grate such as is found in the old houses of the neighbourhood, with sinks, draining boards, dresser and plate-rack, &c.; the floor being formed with a centre of wood blocks and a margin of tiles.

The physics lecture theatre is arranged with rising gallery, with desks and lecture table with all fittings, whilst adjoining is the laboratory, 38 ft. by 20 ft., and research room, 20 ft. by 12 ft. Beneath these rooms are the refreshment and club rooms, which have been remodelled; and in the basement is a spacious boiler and engine house, now being fitted with steam boiler and condensers for heating and electric lighting, and it is proposed to lay down a full electric light and power plant here, and to devote the space to the study of electrical engineering.

The buildings have been carried out by Mr. W. Shepherd, of Bermondsey New-road, from the designs of Mr. Rowland Plumbe. Mr. W. Finney has acted as clerk of works. The steam boiler is being supplied by Messrs. Daniel, Adamson, & Co.; and the warming, water, and hydrant services, &c., throughout have been executed by Mr. W. G. Cannon, of London-road. The laboratory and lecture room fittings are by Messrs. Geo. Hammer & Co.

Correspondence.

***To the Editor of* THE BUILDER.**

THE ARCHITECT'S USE OF BOOKS.

SIR,—I may point out that, although broadly concurring with your remarks on my little paper before the Architectural Association Discussion Section, I am impelled to reply on certain points, as the impression conveyed to you by the *résumé* is pardonably incorrect.

As I was addressing students I naturally laid the primary stress on (1) "the books you make your self," *i.e.*, sketch books, measured-work portfolios-photographs, rubbings, and note-books. However rough one's own sketches may be, the fact of having jotted them down helps the memory so much that, although you may quite have forgotten, let us say, "that delightful visit to Somerset," the sight of five minutes' hasty pencil-work recalls the whole scene of fact and refreshes the imagination. After these (2) come "books of reference;" then, naturally (3), the "books with as little letterpress as possible." The works you mention come under the head of No. 2.

Nothing is more self-evident than that the absolute "crib," which you so rightly castigate, should be discouraged. Yet the ignorant cribber can actually crib, and can caricature to his heart's content in any foolish manner he may conceive *from measured drawings to scale*. It is only an architectural artist who can assimilate and recreate from the published photographs, *in perspective*, to be found in works like that of Gotch. Wherein the spirit of the art is emphasised rather than the T-square of the copyist assisted. Tell he his lies never so exquisitely, even such works as those of Penrose would, in this sense, be of far greater value to the student had they been emphasised by some endeavour to show pictorially what the final and real artistic effect would be to the eye of the beholder.

Other reasons in favour of limited letterpress are (1) that the particular impressions of the author are not so much wanted as the actual facts about the building; (2) the less the letterpress in relation to the

work the greater the presence of the artist himself, in contradistinction to the editor, and the greater the effect on the mind of the genuine student; (3) more care and money can probably be then expended on the illustrations.

With regard to imitative architecture, let me quote from my paper: "It must clearly be borne in mind that strive how you will, refuse to look at all modern work illustrated, ignore the Orders, affect 'originality,' you can do nothing *good* that is new except with a new material. *The most you can do is to make new combinations.* It is this well done that constitutes architecture, and has a freshness which will not die during its creator's life at the very least. Matters of taste are matters of knowledge."

In our struggle for the advancement of architectural art in England, we must ever distinguish between that which arises spontaneously and in harmony with national idiosyncrasies, climatic and building necessities, and any other which partakes rather of the facile imitation of the monkey. The former is the work of the thinker, the artist, the leader. The latter cannot help forward any movement of solid or permanent character.

The whole history of architecture teaches this lesson. We can never too clearly mark the dividing line between the one and the other, and must always remorselessly separate the pure wheat from the worthless chaff. In all I have advanced, I venture to insist that I have pointed out the right way to the student.

To take an illustration. St. Pancras Church, however faithfully reproduced from ancient Greek examples, can never be classed with works of creative art. Has any architect, not a fool, ever learnt any lesson from it except that which every mistake teaches? Even assuming every main feature to be "correct," the more accurately every moulding and detail has been copied, the more is it seen to be ill-adapted to the English climate and London soot, and the more we are convinced that its whole is quite wrong and unsuitable for an English church of the nineteenth century.

Similarly, in the present rage for building new theatres, the attempts to copy Spanish types fail to enable architecture, even in its simplest forms, to rise to the true expression in building, which the apparent renaissance of the English drama demands.

If we cannot learn honestly from old work, by all means let it be swept off the face of the earth. If we can, then the more honestly and completely the better.

And here let me say, not without some regret, that in a large proportion of architectural works the letterpress is the least instructive and valuable part. Hence, generally, I hold that the less individuals air their half-formed or immature opinions on old buildings, instead of giving us more of the solid facts of the buildings in the shape of drawings and details, the better for architectural education.

I cannot imagine, sir, that you could have intended to doubt the value of standard works of reference or histories, dictionaries or encyclopædias, so far as these are true, reliable, and learned. And I hope I am not so juvenile as to wish my young fellow-architects to depend alone on pantomimes or pictures.

Let me conclude, if I may, with a suggestion for your own journal. In order to make on our shelves an important row of reference books of infinitely more value to the profession, could you see your way to make and issue a complete index to 1900, and then start a new series?

PHILIP APPLEBY ROBSON.

Westminster.

*** The index question has been often before us, and has often been suggested by other correspondents. As to other points in Mr. Robson's letter, we do not consider that a single one of the books mentioned in our article of last week comes under his second head of "Books of Reference"; they are books for study. Gwilt is called an "Encyclopædia," but is a great deal more than what is usually implied in that title. The opinion that "in a large proportion of works on architecture the letterpress is the least instructive and valuable portion" is in many cases (we do not say in Mr. Robson's) due to the fact that the students never study the letterpress; they only look at the illustrations; and that is just where we think the mistake lies.—ED.

BOOKS RECEIVED.

SUBURBAN RELICS OF OLD LONDON, NORTH OF THE THAMES.—By T. R. Way and H. B. Wheatley, F.S.A. (George Bell & Sons.)

THE PURIFICATION OF SEWAGE.—By S. Barwise, M.D. (Crosby Lockwood & Son).

LITHOGRAPHY AND LITHOGRAPHERS.—By Joseph Pennell and E. Robins Pennell (T. Fisher Unwin).

EVERYBODY'S GUIDE TO CARPENTRY. By John Black (W. R. Russell & Co.).

ELECTRIC LIGHTING, ROCHDALE.—On the 7th inst. Colonel A. J. Hepper, R.E., held an inquiry at the Rochdale Town Hall with respect to an application on the part of the Rochdale Corporation to borrow 30,000*l.* for electric lighting purposes. There were present Mr. Platt, Borough Surveyor, Mr. Lacy, of London, consulting engineer, and others.

The Student's Column.

SOUND, LIGHT, AND HEAT.—XXIV.

HEAT: FUSION.

EVERY substance begins to fuse at a certain temperature, which is invariable for each substance, if the pressure be constant. Whatever be the intensity of the source of heat, from the moment fusion begins the temperature of the body ceases to rise, and remains constant until the fusion is complete. Such are the results, epitomised by Ganot, obtained by physicists in regard to fusion. The student will hardly grasp the far-reaching applications of these two laws as applied to materials of construction derived from fused products. Let us endeavour to explain a few of them.

"If the pressure be constant," we say above; but is it ever constant in practice? Take cast iron, to begin with. The strength and the value of such a material rests almost entirely upon its molecular, and hence partly crystalline, structure. The top of a pig of such iron cools at the pressure of about 14 lbs. per square inch, the normal pressure of the atmosphere at sea level; but the bottom has the weight of the superincumbent portion of the pig also, which, as we see by the above law, prevents that part from cooling at the same rate as the surface. This may not, at first sight, seem very important, but it is at the root of most of the difficulties of the maker of cast-iron articles used in building. If it were possible for the whole of the pig to cool at the same rate there would be no torsion from within, there would be no tendency for a cryptocrystalline or acicular crystalline structure to be set up in any one portion of the pig than at another, minute air cracks, forming lines of weakness akin to brittleness, could not be formed, impurities instead of being surrounded radially by a species of incipient crystallisation would be passed over and absorbed in the general well-being of the regenerated pig, and, in short, the manufacturer, instead of having to deal with a very obstinate substance, would have under his control a homogeneous material with which he could do almost anything in the way of casting.

But that is impossible by the above laws. The vast majority of the inventions in recent years, dealing not only with the manufacture of cast-iron, but with wrought-iron and steel, have for their aim (often without their inventors knowing it) the attempt to circumvent Nature in the practice of these laws. These laws are of the "Medes and Persians" type. Any attempt to ignore them must also ignore two laws of a much more inexorable type, viz.: that the molecular structure of a mass (whether of metal or any other substance) in a state of fusion depends on the rate at which the substance cools, and upon the pressure under which it cools. The two are very much bound up in one another; but there is a great difference between them.

Suppose we take a substance and melt it in a crucible in presence of great heat—not a low heat, as in melting lead and the like, though even there the two laws could be shown to apply to some extent. Well, take the molten matter in the crucible out into the open air of the foundry and let it cool. Then examine it. It is found to be practically structureless; at least, a micro-examination will show that only a very few microliths (not true crystals) have formed. They will not, in the majority of cases, give any bias to the direction into which the cooled mass may be broken or split. There will be no cleavage, but there will, generally, be much brittleness, especially when the material is of a basic character. What few crystals have formed will be of a nomadic nature and will not have power to determine the strength, aborption, or durability of the whole. The manufacturer does not very often regard the facts in this light, but knows, by practical experience, that fused substances rapidly cooled must always be regarded as inferior to those which have not been so drastically treated.

Therefore, by way of experiment, we may place the crucible and its contents again in the retort. This time reduce the heat slowly; take some days, if need be, in the operation. Examining the cooled material, we find that, in general, it is of a more crystalline nature. From this we learn that the rate at which a body cools (apart from the pressure) materially influences its molecular structure. In short, it becomes tougher, though the degree of toughness will, of course, be closely connected with the actual nature of the substance operated upon.

Reverting to the law enunciated in the first sentence of this article, it will now be more readily understood that in addition to rate of cooling of a molten mass, the pressure promotes difference in cystalline structure, *i.e.*, strength and adaptability for many constructional purposes. Again take the crucible with its contents and replace it in the retort; but, this time, place some weight upon the contents, tightly fitting within. To begin with, the point of fusion is made higher by the introduction of the increased pressure, and when the temperature in the retort is lowered, the fused mass will take longer to cool. That is followed by still more crystalline conditions within the mass, though whether allotriomorphic, cryptocrystalline, or microcrystalline conditions will set in, depends on the chemical composition of the mass, and the amount of pressure. When metallurgists have succeeded in producing truly holocrystalline structure in artificially prepared materials we may hope for a complete revolution in the strength of girders and the like. At present they are more inclined towards varying the chemical nature of the materials of construction, than towards novel methods of manufacture—which is a retrogade movement. The real reason for this is the enormous expense attending experiments in attempting to produce holocrystalline structure. An incipient method has long been in vogue, but it can never take precedence over holocrystallisation produced from direct fusion, or from the promotion of chemical changes in molecular structure under the influences of great heat and pressure. That method is the rolling of steel or other metal, whereby an acicular structure is arranged, in a way, in the mass. The civil engineer will know what the result of this is, in the "fatigue" of metals in girders, steel rails, and what not. The architect will know of the deterioration of metallic supports owing to vibration in buildings.

It is more than probable that the masterly researches of Professor Dewar and others will indicate to us, in the near future, what may be expected from exceptional cold (artificially produced) as a method of promoting "fusion." It seems that phenomena hitherto produced by intense heating may also, to some extent, be engendered by careful treatment at very low temperatures. Two or three years ago the average metal manufacturer would have smiled at any statement to the effect that metals could be made into alloys without their being melted. Now, the difficulty is to define what we mean by "melted," and that begets the meaning, also, of the term "fusion." Many of the more important metals have already been alloyed at extremely low temperatures, and we should not be surprised if the result of these experiments, in the long run, does not succeed in producing holocrystallisation. Those who have never studied the micro-structure of metals used in construction, or who may not be aware of the molecular alteration they undergo in many cases (especially in vibration) in buildings, can hardly appreciate the benefits that may accrue from the production of that more stable condition in structure. Fusion, and what attends it, is to-day the all-absorbing topic of the metal and alloy-manufacturer. Heat, and the cheapest methods of producing it (or, rather, augmenting it artificially), comes under his every-day consideration. But we are entitled to believe that the next generation of metal-makers will pay more attention to reduction of metals by extreme cold, and that the coal bill (and even the arc-furnace) and all that appertains to it, except in a very limited way, will be things of the past. These are interesting topics to speculate upon, but it is dangerous to prophecy, and much safer to treat of fusion as we understand it in practice to-day.

Not long since—a year or two—we should have been able to give a list of refractory substances. Now we hesitate to describe any substance as being "refractory"—*i.e.*, not to be melted. The linings of furnaces consist of materials believed until recently to be *per se* infusible. Those who have followed for some years the gradual breaking down of such materials, as higher temperatures were produced, can have but little faith in anything being infusible. Indeed, that is inconceivable from what is known concerning igneous fusion carried out by Nature, in rocks and under many conditions. Nature is a fairly safe guide in

such things, and when we were told by the advanced physicists of a few years ago that quartz was infusible, lime could not be reduced, and alumina and magnesia refused to succumb to the effects of heating, it was only necessary for the closer student of Nature to reply that she had done these things in her laboratory, and that the refractoriness remained rather with the methods of the physicist than with the substances treated. We are, unquestionably, on the threshold of many important discoveries in this branch of physics, and it is dangerous to perpetuate past results, which are being modified every day, and materially, even since this series of articles on elementary physics was commenced.

OBITUARY.

PROFESSOR HAYTER LEWIS.—We regret to record the death, at the age of eighty, of Professor Hayter Lewis, F.S.A., which took place at his house in Kensington Gardens-square on Saturday the 10th inst. Professor Lewis was an old Royal Academy student and subsequently a pupil of Sir William Tite. He afterwards spent two years in travelling on the Continent, and subsequently went into partnership with Mr. Finden, in conjunction with whom he built the Panopticon, shortly afterwards converted into the Alhambra Theatre.* In 1860 he took up the duties of Hon. Secretary of the Institute of Architects, which he carried on for some time, and a few years later he was appointed Professor of Architecture at University College, a kind of position for which his special requirements eminently fitted him. He designed and carried out the southern return wing of University College, which formed the commencement of what promised to be a fine addition to or rather completion of Wilkins's building, until spoiled by the ill-judged additions subsequently made. Among Professor Lewis's other buildings were the Infant Orphan Asylum at Wanstead; No. 4, Crown-court, Austin Friars; and (in conjunction with Mr. W. Slater) the first portion of the restoration of St. Bartholomew's. Among his literary works were the article on "Architecture" in the "Encyclopædia Britannica," and a small but important work on "The Holy Places of Jerusalem," the concise result of a good deal of special study. Professor Lewis had always had, we should imagine from his frail appearance, rather weak health, and for the last few years of his life he was almost a confirmed invalid. He was a man of much individuality of character and attainments, and one whose opinion on disputed points either in architectural history or criticism was always held in high respect.

MR. F. BARNES.—The death has just taken place of Mr. Frederick Barnes, architect, of Ipswich. Mr. Barnes, who had reached his eighty-fifth year, went to Ipswich in 1843 to assist his friend John Medland Clark in his work of the new Customs House. Shortly after he was engaged by Mr. Bruff, for whom he designed the station and buildings on the Eastern Union and other railways under his direction. In 1850 Mr. Barnes began a general practice, and was awarded the premium in the competition for the Ipswich Grammar School. He also won the competition for the Public Hall at Colchester, and St. Mary Magdalene Church in the same town. Shortly after he designed the Congregational Chapel in Tacket-street, and the chapels in Crown-street and Museum-street, which led to the Lion-walk Chapel at Colchester, and others at Stowmarket, Halstead, Sudbury, Braintree, Nayland, and Tiptree, and several smaller chapels in neighbouring villages. In 1862 Mr. Barnes' design for a church and parsonage at Birkley Park, Kent, was selected in a limited competition with four London architects. At the same time he was engaged upon additional classrooms at Harrow School and in erecting boarding-houses for some of the Harrow masters, and a mansion for Mr. Charles Buxton, of Foxwarren, Surrey. In 1868 he designed the Ipswich Public Hall, the buildings in Westgate-street, and the improvements in the Butter Market. He also erected some dozens of schools before the operation of the School Board, and many parsonages and churches, including the New Church at Melton, and the Presbyterian Church at Ipswich, the tower of St. Lawrence Church (in conjunction with Mr. Howard Gaye) and many private houses in the eastern counties. He designed for the late Sir Richard Wallace, Bart., M.P., the Park Lodges and other ornamental buildings, including the rebuilding of Sudbourne Church, besides erecting and rearranging several farmhouses and homesteads on Sir Richard's estate at Sudbourne. It is now some years since Mr. Barnes was actively engaged in his profession.—*Eastern Daily Press.*

CONSTITUTIONAL CLUB, NEAR EGHAM.—A Constitutional Club for Englefield Green, Egham, was opened on the 1st inst. The premises, which are situated at Harvest Corner-road, have been built by Mr. Rowland, of Englefield Green, from designs by Mr. W. Menzies.

* A view of the interior was published in the *Builder* of March 18, 1854.

GENERAL BUILDING NEWS.

CHRIST CHURCH, NORTH BRIXTON.—The foundation-stone of the new Christ Church, North Brixton, was laid on Tuesday by Princess Christian. The architect of the church is Mr. Beresford Pite, and the building will seat 1,200 persons. A description and an illustration of the church appeared in our issue for June 27, 1896.

PARISH CHURCH, HUTCHESONTOWN, GLASGOW.—The memorial stone of the new Hutchesontown Parish Church, which is being erected at the north-west corner of Rose-street and Rutherglen-road, was laid on the 3rd inst. The church is to be seated for 950 people. There is also a hall alongside to seat 600. The church has back and side galleries, with side aisles, and a special feature is a chancel arch, suitable for an organ-chamber, with the pulpit in front. The arch will have three relieving arches. The roof is of iron and slate, and it covers the whole span, without any clearstory. The outside of the church is red sandstone, with rock-faced courses. The main entrance faces Rutherglen-road, and there are to be two side entrances. There is a tower at the west end of the main entrance, but there will be no spire. The architect is Mr. Alexander Adam, Glasgow.

CHURCH RESTORATION, BRIXHAM.—The reopening services in connexion with the lower parish church, All Saints', Brixham, took place on the 7th inst. The restoration has been undertaken in parts. The first was effected in 1868, when the chancel was built. Other portions have been executed since at a cost of about 8,000*l.* The present contract, by Messrs. Yeo, of Torquay, of about 800*l.*, embraced a new nave roof. The outer part of the roof is of red tiles. In addition to the roof, the chancel has been improved. The floor has been lowered, the screen and gates done away with, and the sides draped. The work has been carried out under the direction of Mr. Micklethwaite.

PROPOSED NEW CHURCH, RETFORD.—A scheme for the erection of a new church for the population of South Retford and Ordsall has been set on foot, and a site upon the main road has been secured. Mr. C. Hodgson Fowler, F.S.A., of Durham, has prepared a ground plan of a permanent church, which he estimates will cost 6,800*l.* This is for a church of brick with stone dressings. Another 1,000*l.* will probably suffice to provide a large room at the rear to be used for Sunday school purposes, parish meetings, &c.

UNION CHAPEL, DEANSHANGER, NORTHAMPTONSHIRE.—The newly-erected Union Chapel at Deanshanger has just been opened. The new building has been erected by Mr. A. P. Hawtin, builder, of Northampton, from designs by Mr. J. Coker, of Wolverton, and is built of red brick with white stone dressings.

CHURCH FOR THE FREE CHURCH SECESSIONISTS, INVERNESS.—The trustees of the Inverness congregation of the Free Presbyterian Church have purchased the plot of ground at North Church-place, in front of the old Free North Church buildings, with the view of erecting a church. The site is a central one, and the new church is designed to accommodate 700 persons. Messrs. Ross & Macbeth, architects, have been instructed to prepare plans.

BLOOMFIELD NEW PRESBYTERIAN CHURCH BELFAST.—This new building, an illustration of which appeared in our issue for November 19, is situated near Bloomfield Railway Station. For various reasons only a portion of the scheme has been proceeded with at present. The buildings are of Scrabo sandstone, with red Dumfries sandstone dressings. Westmoreland green slates are used for the roofing. The main entrance to the church will face the Beersbridge-road, and when completed will show an arcaded front to the vestibules and porches, over which will rise the main gable, with a large window with stone mullions and traceried head. A further door for exit purposes is placed under the tower and spire, which will rise to a height of 125 ft. The inside length of the present erection is 64 ft., and the width 50 ft.; this space is divided into a central area, with aisles at each side, by columns, which support the gallery front, and are further continued to support the arcaded wall, on which the roof principals rest. At present the church will seat 750 persons. The choir is placed on a slightly raised platform in front of the pulpit. The gallery front is of wrought iron in panels. At the rear of the church is a large vestry, minister's porch, and cloak-room. The future extensions at this end will consist of the lecture-hall. On the ground floor class-room and library accommodation will be provided, while the upper floor will be the large lecture-hall, with open timber roof. The artificial lighting of the church is by gas. The heating and ventilation arrangements have been carried out by Mr. A. Whittam, of Bloomfield. The building contract has been carried out by Mr. John Killen, from the plans and under the superintendence of Messrs. J. J. Phillips & Son, architects. The entire cost of the building will be 4,500*l.*

TECHNICAL SCHOOLS, BARROW.—At the monthly meeting of the Barrow Town Council, on the 5th inst., discussion took place with reference to the report of the Technical Instruction Committee regarding the proposal to erect new technical schools at a cost of 10,000*l.* The report stated that the schools of various towns had been visited, and they recommended the carrying out of the plans of Messrs. Woodhouse & Willoughby, the building to be of Ruabon and Accrington red brick, with golden buff terra-cotta dressings.

CATHOLIC SCHOOL, CHESTERFIELD.—A new Catholic school has been erected at Chesterfield. The school adjoins the other school, on the ground at the rear of the church in Spencer-street. The architect was Mr. Ashmore, and the builder Mr. Wright, of Barlow.

BANK, MORLEY.—A bank building is now being erected in Queen-street, Morley, by Messrs. C. Murgatroyd & Sons, of Idle, in the French Renaissance style, from the designs of Mr. W. Bakewell, Leeds, for the London and Yorkshire Banking Company. It is a four and five storied building, of Aberdeen polished granite up to the window sills of the ground floor, and Morley Howley Park stone above. In the basement is the strong room; on the ground floor is the main room of the bank, 30 ft. by 22 ft., with mosaic floor, laid on concrete. On the first floor is the manager's residence, containing dining and drawing room and study, with overhanging and balcony windows, with bedrooms on the second floor. There are eight offices, and the whole of the premises will be lighted by electricity, fitted with electric bells, and heated with low-pressure hot water. There are two staircases.

MODEL LODGING-HOUSE, CARLISLE.—The foundation-stone of the model lodging-house about to be built at the north-east corner of Drovers'-lane by the Carlisle Lodging-house Company was laid recently. The site originally covered an area of 745 superficial yards, ninety-five of which the Corporation have agreed to purchase to make Drovers'-lane a 30-ft. street. In the basement is the caretaker's house, comprising kitchen, scullery, and two bedrooms; laundry, with all necessary washing and drying apparatus; lavatory and bath accommodation; clothes washing and drying rooms for the inmates; and a store. The ground floor, with an entrance from Drovers'-lane, comprises entrance hall, retail shops and ticket office, kitchen, where the inmates will be allowed to prepare and cook their own food, and dining hall fitted with private lockers. There are also five lock-up shops with basements, fronting into Lowther-street. The first floor, approached by a stone staircase, comprises recreation-room and dormitory, with thirty-two cubicles fitted with bed and box-seat complete. There are also three sets of lavatories and two blanket stores on this floor. The second floor, also approached by a stone staircase, consists of a dormitory with thirty-two cubicles, and a smaller dormitory with twenty crib beds, also three sets of lavatories and two blanket stores. Externally, the building will be faced with Cumwhinton bricks and white stone dressings, the piers to shops and the frontage to Drovers'-lane being built in rusticated courses up to the first-floor level, and the whole will be relieved with pilasters, moulded brick jambs, and cornices. Internally, the walls of the entrance hall and staircase will be faced with white bricks, while the dining hall, kitchen, recreation-room, and dormitories will be faced with local red bricks. The floors over the basement and shops will be of concrete. The contractors employed to carry out the work under the supervision of the architect, Mr. H. Higginson, are:—Messrs. J. & R. Bell, builders; J. H. Reed, joiner; C. H. Bray, ironwork; W. Anderson, plumber; J. Hewitson, slater; S. Ferguson & Son, plasterers; W. N. Ballantine, painter; T. Bradford & Co., laundry fittings.

MUSIC HALL BUILDINGS, ABERDEEN.—Various improvements have just been carried out at these buildings from designs by Mr. A. Marshall Mackenzie, A.R.S.A., architect, Aberdeen. There has been introduced a flight of Sicilian marble steps leading from the outer to the inner vestibules, and these vestibules and the main corridor have been floored with mosaic Terrazo. The works above mentioned were executed by Messrs. James Bannochie & Sons, Aberdeen. The ball-room has also been redecorated by Mr. John Williamson, decorator, Aberdeen.

BRANCH BANK AT SEAHAM HARBOUR.—The North-Eastern Banking Company have opened a branch at Seaham Harbour. A block of premises in Church-street has been transformed into bank premises, from plans prepared by Messrs. Milburn, architects, Sunderland.

COTTAGE HOSPITAL, ELTHAM.—On the 3rd inst. was opened the new Cottage Hospital erected by inhabitants of Eltham and Mottingham in commemoration of the Queen's recent Jubilee. The hospital, designed on the pavilion system by Mr. A. B. Hutchinson, comprises two principal wards for ten patients, two private wards, bath-room, and corridors.

RAILWAY INSTITUTE, BANGOR.—This institute was opened on the 7th inst. The reading-room, or large hall, is 50 ft. by 28 ft., with a platform at one end, 10 ft. wide. The reading-room is heated with hot water pipes on the high pressure system, and is ventilated by air inlets built into the walls, with one of Boyles' extractors in the roof. There is a store-room underneath. Between the library and the committee-room is a flight of steps leading to the baths, gymnasium, and refreshment-room. The gymnasium is 30 ft. long, and varies in width from 12 ft. to 18 ft. The whole of the work has been executed by the railway company's staff, from the designs and under the direction of Mr. W. Dawson, the railway company's engineer at Bangor

TECHNICAL INSTITUTE, CONSETT.—The foundation stones of the Technical Institute for Consett were laid on the 1st inst. The estimated cost of the buildings is about 5,000*l.* The architect is Mr. C. E. Oliver, and the contract has been let to Messrs. John Marshall & Son, of Hawick. The Institute will occupy a site at the north end of the town, facing Park-road and adjoining the public park. The building is set back 16 ft. from the road, and will be enclosed by a wrought-iron palisade. The general design of the structure is Renaissance. The exterior walls are faced with red pressed brick and Prudham stone dressings. The principal entrance has a deeply-recessed arched doorway, and leads through a vestibule, with stained-glass screen, into the entrance hall, from which direct access is obtained to the whole of the ground-floor rooms. Right and left of the entrance are ladies and gentlemen's retiring rooms, with lavatory accommodation. Immediately opposite is the secretary's or headmaster's room, with store room adjoining. On the left of the hall are two class rooms, each 22 ft. by 20 ft., divided by sliding glazed screens, to permit of their conversion into one large room when required; and on the right of the hall is the physics laboratory, 28 ft. by 20 ft., with class room, 16 ft. by 20 ft., adjoining. The staircase hall is lighted by a circular-headed window, fitted with tinted glass. The staircase is of polished blue Robin Hood stone, with wrought-iron balustrading and oak handrail. The corridors are of fireproof construction. The first floor consists of a chemical laboratory, 34 ft. by 20 ft. 6 in., with store room, balance room, and preparation room; lecture room, 32 ft. by 16 ft.; class room, 28 ft. by 20 ft. 6 in.; and art room, 42 ft. by 16 ft. The second floor, which has been designed with the view of being adapted for use as an art room, with store room, clerk's room, &c., in the future, will at the outset be utilised as caretaker's apartments. Detached from the main building is a room 47 ft. by 16 ft., to be devoted to the teaching of manual instruction.

PARISH HALL, FAZELEY, STAFFORDSHIRE.—A new Parish Hall has been erected at Fazeley. The architects are Messrs. Wright & Tomlinson, Derby. The hall is a structure of red brick, with terra-cotta dressings. It contains a library, reading and recreation room, Parish Council chamber, and committee-room; also an assembly-hall which will accommodate nearly 500 persons. The builder was Mr. R. Kershaw, Burton-on-Trent.

Y.M.C.A. BUILDINGS, BIRKENHEAD.—On the 3rd inst. the new junior building at the Birkenhead Young Men's Christian Association was opened. The new building, which has been erected by Mr. J. H. Jackson, Birkenhead, from the plans of Mr. John Clarke, has an exterior of Ruabon brick, with stone and terra-cotta dressings. The entrance is from Oliver-street, through a hall into reading and recreation rooms, cloak-rooms, and lavatories. There is a hall on the second floor, with a platform, and various small rooms.

HOTEL FOR BUXTON.—Over fifty men are now employed getting out the foundations for the new hotel to be erected on a site in the Peak, Buxton, for Spiers & Pond, Limited. The land, eight and a half acres in extent, has been purchased from the Duke of Devonshire for 6,900*l.*, and the building alone will entail an outlay of 125,000*l.* It is to accommodate about 300 guests, and is to be completed by the year 1900. The architects are Messrs. Bodley & Garner, of London.—*Sheffield Telegraph.*

PROPOSED NEW LIBRARY, LIVERPOOL.—On the 9th inst., at the Municipal-buildings, Major-General H. Darley Crozier, R.E., the inspector appointed by the Local Government Board, held an inquiry into the application of the Liverpool Corporation for consent to the appropriation of the sum of 17,500*l.* out of the proceeds of the sale of corporate property, in defraying the costs of the provision of a public library for the south end of Liverpool. Mr. Shelmerdine, City Surveyor, explained the plans of the proposed building, which would stand upon about 1,350 square yards of land.

WOLVERHAMPTON'S NEW WORKHOUSE.—At the meeting of Wolverhampton Board of Guardians on the 9th inst., the New Workhouse Committee reported that they had had several interviews with the architect, Mr. Marshall, of Nottingham, as to the alterations in his plans for the new workhouse, suggested by Mr. Aldwinckle, the assessor. Mr. Marshall had altered the plans to carry out the committee's suggestions and recommendations, and the plans so altered had been approved by the committee, who recommended the Board to adopt them, and instruct the Clerk to forward them to the Local Government Board for approval. By these alterations the estimated cost of building the workhouse is reduced by 12,003*l.*, leaving the net estimated cost at 117,670*l.* The committee reported that they had also considered the question as to the quantities, and recommended that Mr. Marshall be employed to take out the quantities at a fee of 1 per cent. on the total amount of the builder's or contractor's accepted tender. The Chairman gave notice that he would move the adoption of the report next week.

PAROCHIAL HALL, NORWICH.—The new hall in St. Stephen's-square, which has just been built to serve the purposes of St. Stephen's parish, was opened on the 9th inst. The dimensions of the hall are 60 ft. by 30 ft., and its material is brick, with stone dressings. The principal entrance is from the square, and at the other end there is another entrance communicating with Crook's-place. The main entrance is by way of a vestibule, on the left of which is a platform which serves as a vestry. At the Crook's-place entrance there are kitchens and lavatories, and above these there is a large class-room. In the basement is a heating chamber. The architect is Mr. J. B. Pearce.

THEATRE FOR FINSBURY PARK.—A site has been purchased at Finsbury Park for a new theatre. Messrs. Murray & Foster, of the Adelphi, are the architects of the proposed building.

INFIRMARY NURSES' HOME, WANDSWORTH.—The foundation-stone of the new nurses' home in connexion with the Infirmary of the Wandsworth and Clapham Union, on St. John's Hill, has just been laid. The new home for the accommodation of the nurses of the infirmary is being erected on the northern portion of the infirmary grounds. The principal approach is by means of an open covered way from the main corridor of the ground floor of the infirmary wards. Access to the building can also be obtained from the terrace at the northern end of the wards. The building will provide accommodation for seventy-five nurses in separate rooms, apartments for the assistant matron and for the principal night nurse. A large recreation-room for the general use of the nurses is placed close to the entrance-hall, and adjoining the same is a separate sitting-room for the accommodation of thirty sisters; adjacent to these two rooms is lavatory and cloak-room accommodation. Leading from the entrance hall is a corridor, on either side of which the bedrooms for the nurses are arranged, and a stone staircase placed centrally in the length of the building gives access to each of the respective floors (four in all), having corridors right and left of the same extending the full length of the building. Sanitary and bath-room accommodation is provided in a central portion on each floor, and there is a lift for boxes, coal, &c., running the full height of the building. Two separate external fire-escape staircases are provided in convenient positions. Nurses' box-room, store-rooms for linen, bedding, &c., are provided. The night nurses' bedrooms are to be placed upon the top floor. The warming to the corridors and supplemental heating to the recreation-room, &c., is by means of hot-water radiators. The contractors for the building are Messrs. Gregory & Co., of Clapham Junction, and it is being carried out from the designs and under the supervision of Messrs. Lansdell & Harrison, of London.

NEW NURSES' HOME, LEEDS INFIRMARY.—On the 12th inst. a new nurses' home was opened at the Leeds General Infirmary on the elevated ground at the rear of the hospital. The structure is of three stories, with basement, and has frontages to Thoresby-street and Sunny Bank-street. The material is red brick relieved with stone dressings from the Morley quarries. Accommodation is provided in the new home for fifty-two nurses, each having a separate room. On the ground floor of the east wing, with a southern aspect, are two day-rooms—one for the sisters and the other for the nurses—and also a writing-room. On the north side is the recreation-room, 30 ft. by 25 ft., and not far off is a small visitors' room and a small kitchen. In the courtyard at the back is a bicycle shed, with stalls for thirty-two machines. The rooms and corridors are lighted at night with the electric light. The heating is effected by low-pressure hot-water pipes and radiators. All the bedrooms are cross-ventilated by means of air-inlets in the outer walls, with valves under control, and hinged fanlights over the doors opening upon the corridors. Fresh warmed air is also introduced. In the principal day-rooms the vitiated air is extracted by automatic ventilators and extraction flues. All the sanitary fittings are of glazed ware. The architect of the building is Mr. W. H. Thorp, and the building has been erected under his supervision by Mr. J. Gould. The clerk of the works was Mr. J. Graham.

CLERGY AND CHOIR STALLS, TWYWELL, NORTHAMPTON.—In memory of the Rev. Horace Waller, late Rector of Twywell, clergy and choir stalls and a tablet have been placed in Twywell Church. The work was carried out by Messrs. Harry Hems & Sons, of Exeter, under the superintendence of Mr. J. C. Traylen, Stamford, the architect.

SANITARY AND ENGINEERING NEWS.

BRIDGE, SHEFFIELD.—A new bridge is being built over the Don at Ball-street, to take the place of the old footbridge. The bridge will also provide a means of communication between the two districts of Shalesmoor and Neepsend. The dilapidated state of the old iron footbridge was frequently brought before the notice of the City Council up to a short time ago, and the City Surveyor (Mr. C. F. Wike) on being instructed to examine it, found the ironwork so corroded that he deemed the bridge unsafe, and advised the committee to close it. It was in three spans, and was only 10 ft. wide, and representations as to the desirability of having a wide bridge had been made for a considerable time. The Council decided to build such a bridge, and, at the same time, to widen Ball-street on the Shalesmoor side. A quantity of old house property has been purchased on the side of the street opposite Messrs. Dixon's works, and the width of the street will be increased from 21 ft. to 40 ft. Unfortunately, the whole of the street cannot be so improved. For the last 100 ft. the approach to the bridge will remain at its present breadth, but, apart from this, there will be a good road, 40 ft. wide, both on the bridge and on each side of it. The design submitted by Mr. Wike, and accepted by the Council, is for an iron bridge of an ornamental and substantial character. The river here is about 200 ft. wide, and the bridge will rest on two central piers and an abutment on each bank. There will thus be three spans, each about 70 ft. long. They will be arched, and the segments of the arches fastened with buckle plates. From each pier will rise a heavy stone pilaster, the top of which will be nearly 15 ft. above the water line. From the crown of the arch to the waterway the space will be 6 ft. 6 in. The balustrades will be of open iron work, running the whole length of the bridge, except where interrupted by the stone pilasters. The bridge will be paved with wood, and there will be a footpath on each side, with a roadway 24 ft. wide between. Messrs. Braithwaite & Co., of Leeds, are the contractors. —*Sheffield Telegraph.*

PROPOSED NEW SEA WALL, HERNE BAY.—A Local Government Board inquiry was held at Herne Bay on the 10th inst., on the application of the Town Council for a loan of 40,000*l.* required for the renewal of the sea-wall and parade, which were damaged in the gale in November of last year. It was explained by Mr. Baldwin Latham, civil engineer, that the new sea wall would be 1,924 yds. long and 20 ft. to 25 ft. high, being so constructed that it would allow of the promenade being widened 15 ft.

DRURY LANE THEATRE.—The application of electrical power for moving stage machinery was first advocated before the Society of Arts by Mr. Edwin O. Sachs, and further dealt with in his book on "Stage Construction." The first manager to seriously take up the matter is Mr. Arthur Collins, who, after inspecting the various hydraulic stages of the Continent, agreed that electrical power would be more practical and economic for English purposes, and had designs for a modernised stage prepared by Mr. Sachs. The difficulties as regards the supply of current were overcome by arrangement with the Charing Cross Company; whilst the contractors selected for the somewhat difficult pioneer work were the Thames Ironworks Company, who took up the matter more for the credit of the thing than for profit. The first part of the work relates to the stage floor, which is divided into six large sections, on two of which hydraulic power has already been temporarily tried (*i.e.*, on the two central ones). The first sections to be worked by electricity were the fifth and sixth, *i.e.*, those most distant from the auditorium. These are the sections completed up to date. They have been principally constructed by night, or at odd moments during the run of the autumn drama. Each section measures 40 ft. by 7 ft. 6 in., and forms an independent whole. The idea is to raise the stage floor above the stage to the extent of 12 ft., or to lower below it to the extent of 8 ft., for the purposes of scenic effect, without incurring a working expenditure exceeding a shilling per performance, and at a capital outlay of not more than half of that of a hydraulic installation. The waits for building up scenery are to be avoided, the staff of unskilled labour on the stage to be reduced to a minimum. Transformations by open scenes are to be made possible without any special effort beyond the attendance of an electrician at the switch-board. By a combination of sections working at different levels the most varied effects can be obtained, and it is of course possible to couple two or more sections together for a specific purpose. Each section of the stage now takes the form of a platform resting on a lattice work "bridge," the "bridge" being suspended by wire cables, part of the weight being taken up by counterweights, whilst the difference and any load is moved by a winding gear driven by an electric motor. The weights that have to be dealt with in the form of live loads are varied from four tons to two tons; whilst the dead load necessary to obtain the stability requisite to carry galloping cavalry, four-in-hand coaches, &c., is six tons. Two-thirds of this dead load is taken up by the counterweights referred to. The power of the motor may be defined as 7½ h.p.; the maximum rate of movement on a vertical rise of 20 ft., one minute. The value of the current for any one movement of, say, 10 ft. may be taken as a penny.

STAINED GLASS AND DECORATION.

WINDOW, ST. GEORGE'S CHURCH, CANNES.—In remembrance of the late Lady Glenesk, a memorial window, which has just been completed by Messrs. James Powell & Sons, will be erected at St. George's Church, Cannes. Mr. James Powell designed and superintended the work.

MEMORIAL BRASS, LLANDAFF.—The memorial brass to the memory of the late Archdeacon Griffiths, to be placed in Llandaff Cathedral, has just been completed from the designs of Mr. C. B. Fowler, architect, Cardiff. The design is Celtic in character, the outline being adapted from ancient manuscripts and the ornamental work from the pre-Norman crosses and memorial stones of South

Wales. The brass, which measures some 3 ft. in height and 2 ft. 6 in. in breadth, has at its head a medallion of the late archdeacon, and below are a few biographical details of his career. The work has been carried out by Mr. John Williams, Cardiff.

FOREIGN.

FRANCE.—The Société Centrale des Architectes have re-arranged their official staff for the coming year. M. Alfred Normand, member of the Institute, has been elected President.——The suppression of the Paris fortifications between the Point du Jour and the Porte de Saint Ouen seems to be nearly determined on, and it is said that the State are going to sell the military zone to the City of Paris for the sum of 133,500,000 francs.——In the spring the interior works for the Salle des Séances of the Chambre des Députés will be begun, and it is expected they will be finished by the middle of 1900. The present hall will be transformed into a Salle de Conferences, and as an annexe to the Bibliothéque des Députés.——A monument is to be erected to the memory of Baltard, the architect, who built the Halles Centrales and the Church of Saint Augustin.——The first cupola of the small palace of the Champs Elysées has just been finished. The second cupola is well advanced, and the side ribs are being placed in position. The Pont Alexandre II. will soon be sufficiently advanced to receive the groups destined for it.——The Mairie of Saint Mandé has just opened a competition for the building of some schools.——The "Société des Amis des Arts" of Angers are going to erect a monument in the courtyard of the museum to the memory of the painter Lenepveu. This monument, the plan of which has been designed by M. Marcel Lambert, architect, will be ornamented with a bust, by M. Injalbert, and with a bas relief by M. Roty.——The Dieppe Chamber of Commerce has appropriated the sum of four million francs for the object of improving the entrance into the port, and of protecting the canal from the silting up of shingle. The works will much improve the port, and will facilitate communication with England.——A monument in honour of the brothers Joseph and Xavier de Mestre is to be erected in the Place du Château, at Chambery, facing the Fontaine des Elephants. This monument is to be inaugurated in June.——M. Emile Bernier, architect of the Opera Comique, has been promoted "Officier" of the Legion of Honour.——The death is announced of the artist Louis Marold, author of some pretty illustrations for the works of Alphonse Daudet, of Pierre Loti, and André Theuriet.——M. Brouch, architect, Paris, has just died at the age of seventy-eight.——The death is also announced of M. Le Cardonel, architect to the City of Paris, at the age of twenty-nine.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. R. Stephen Ayling, architect, has removed from Parliament Mansions, Victoria-street, to 19, Old Queen-street, Westminster.——Messrs. Sheath Bros., India-rubber and Gutta Percha manufacturers have removed to 87, City-road, E.C.——The Horsfall Furnace Syndicate, of Leeds, manufacturers of refuse destructors and forced-draught boiler furnaces, have opened a London office at 36, Great George-street, Westminster, under the charge of Mr. Somerset Butler.

THE PAINTERS COMPANY.—This Company is offering a Travelling Studentship of the value of 50*l.* for the encouragement of the study of Decoration. It is open to competition on terms which may be obtained from the Clerk to the Company.

THE LONDON HOSPITAL.—The governors of the hospital will promote a bill next session to enable them to acquire some leasehold interests or reversions in certain property of which they are freeholders, consisting of Nos. 13 to 23 (odd) in Oxford-street, Whitechapel, and of land forming the site of John Baker's almshouses, lying next, westwards, to a garden leased by them to the Brewers' Company, in order that they may erect thereon additional buildings for the purposes of the hospital. On June 26, 1891, was opened the new block, containing an operating-theatre, a theatre for clinical instruction, nurses' rooms, store rooms, &c., after the designs and plans of Mr. Rowland Plumbe. In 1813 John Baker gave 2,500*l.*, a cottage, and 31 acres of land at Mill Hill, Horton, and 6,000*l.* Reduced Three per Cent. stock, in trust to the Brewers' Company, as endowment (after deduction of certain small payments) for six almshouses, with clothing and allowances for six poor women of the parish of Christ Church, Middlesex. According to some returns made by the company nineteen years ago the income of Baker's Trust amounted to 690*l.* 8s. 10d., of which 271*l.* was expended upon the almshouses and their inmates.

"SIMPSON'S," CHEAPSIDE.—The old "Queen's Arms" tavern, in Bird-in-Hand-court, Cheapside, has just been re-built as "Simpson's," from Mr. Elphick's plans and designs. It stands at the south end of the little court at No. 76, Cheapside, referred to in our columns of October 22 and November 19, in the matter of Hobbs, Hart, & Co. *v.* Grover. Charles Cowden Clarke records that Keats, when a medical student, lived, in 1816-7, with his brother in lodgings in a house over the passage leading to the "Queen's Arms"; he there wrote the greater part of his first volume of poems. The passage, Bird-in-Hand-court, passes beneath the first floor of the house, No. 76, Cheapside, which, however, was rebuilt thirty years ago.

LONDON COUNTY COUNCIL.—By their "General Powers" Bill for next Session the Council propose to (1) dissolve and reconstitute the River Lea Conservancy Board, and provide for the nomination of members of the new Board by the Council, the Corporations of the City and West Ham, and the County Councils of Middlesex, Essex, Bedford, and Herts; (2) purchase, for purposes of the Metropolitan Fire Brigade Acts, the following sites:—Nos. 61 to 71 (odd), Chatham-road, Battersea; Nos. 38 to 41, Pickering-place, and Nos. 7 to 10, Pickering-mews, Westbourne-grove; No. 138, Maida-vale (Kilburn Priory site); Nos. 139 to 145 (odd), Burdett-road, Mile End Old Town; Nos. 69 and 69a, Euston-square, and 174, Euston-road, with a plot of ground adjoining; and to enlarge the stations in Old Kent-road and Bethnal Green; (3) enlarge their gas-meter testing station, Westminster; and (4) take, for an open space, the Brickfield, Limehouse. The Council also propose to acquire by agreement the freehold interest in the site of Spitalfields Market; to add to Tooting Common a portion of Hyde Farm, now belonging to Emmanuel College, Cambridge, to which college they will give certain lands of Tooting Bec Common in exchange; to provide for contributions by the Middlesex County Council, the Vestries of St. John, Hampstead, St. Pancras, Paddington, and St. Marylebone towards the purchase of the Golders Hill Estate, Hampstead Heath; an extension of time in respect of works now in progress at Highgate Archway, Knightsbridge (widening of St. George's-place), and Hackney Marshes (purchase of the "White House" property); and to obtain further powers to enable them to enter upon lands and buildings situated within certain "improvement areas" for the purpose of survey and valuation, to enter upon and survey and value at any time lands shown on the deposited plans, and to obtain information as to value and ownership.

THE SANITARY INSTITUTE.—At an examination in practical sanitary science, held in London, on December 2 and 3, six candidates presented themselves. Mr. W. Ord, Hanwell, was granted a certificate in practical sanitary science. At an examination for inspectors of nuisances, held in London, on December 2 and 3, 128 candidates presented themselves, of whom seventy-four were certified, as regards their sanitary knowledge, competent to discharge the duties of inspectors of nuisances.

THE LONDON SCHOOL BOARD AND BUILDING CONTRACTS.—At the meeting of the London School Board on Thursday last week, a point was raised by Mr. G. C. Whiteley, chairman of the General Purposes Committee, on a claim by a certain firm for increased payment on account of a rise in wages since the completion of their contract. The rule of the Board is that where the London scale of wages should apply the contractors shall pay to the workmen employed by them the rates of wages mutually agreed upon by the Central Association of Master Builders and the representatives of the unions of the various branches of the building trades, which agreed rates of wages are invariably set out in the schedule attached to the contract. Obviously such a condition of contract cuts both ways. It appears that after the commencement of the works contracted for by this firm a general and official rise in wages took place in the building trade by agreement between the employers and representatives of the trade unions. The Board at first refused to entertain the claim for extra payment, but the committee consented to allow the case to go to arbitration. —*Daily Chronicle.*

THE ILLUMINATING POWER OF ACETYLENE.—Professor Vivian B. Lewes delivered his concluding Cantor lecture on "Acetylene," at the Society of Arts, on the 12th inst. This lecture was devoted to the consideration of the relative values of the various types of acetylene burner, and of the value of acetylene when mixed with other gases. The lecturer pointed out that the statement commonly made that the illuminating value of acetylene is fifteen times as great as that of coal gas is misleading; for, although it is true that under certain conditions it is possible to obtain an equivalent of nearly 240 candles per 5 cubic feet of acetylene consumed per hour, yet in practice these conditions are never obtained. He had examined a large number of burners of all varieties, and found that the average illuminating value obtained was about thirty-two candles per cubic foot of acetylene. Moreover, these comparisons are made upon the arbitrary standard of sixteen candles per five cubic feet of coal gas per hour, whereas, if the coal gas is burnt in an incandescent gas-light burner fitted with a good mantle, instead of in a standard Argand burner, it is possible to obtain a yield of over eighteen candles per cubic foot of coal gas. Referring to the gradual choking of the minute holes in acetylene burners through the deposition of carbonaceous matter, Professor Lewes said that he considered this deposition to be due to the formation and subsequent decomposition in the burner of small quantities of benzene. The modern forms of burner, constructed on the same principle as the Naphey burner, do not become blocked so rapidly as the earlier forms of burner, but the difficulty has not yet been entirely overcome. Professor Lewes thought that a mixture of acetylene with a cheap diluent, such as methane, which would allow the acetylene to exert its full proportional enriching value, would be extensively used in the future; and mentioned that already compressed oil gas mixed with from 20 to 25 per cent. of acetylene was largely used, especially in Germany, for the lighting of railway carriages.

INSTITUTE OF ARCHITECTS' MEETING.—By an error in reporting, Mr. Solomon was made to say, in our report of his speech in the discussion at the Institute in our last issue, that the flooring of certain American buildings "was mostly ironwork ¾-in. thick." It should have been "the flooring boards were mostly ¾-in. thick."

BACK-TO-BACK HOUSES, LEEDS.—A deputation from the Leeds Corporation was, according to the *Leeds Mercury*, to have had an interview on the 13th inst. with representatives of the Local Government Board, in order if possible to induce them to allow the erection of back-to-back houses in the York-street area for the accommodation of tenants who are displaced by the demolition of slum property in that locality. This subject was discussed at a recent meeting of the City Council, when a resolution was passed approving of the erection of back-to-back houses. The Corporation are bound by law to provide a certain number of dwellings for those they destroy. They would like to build through houses, but the capital cost, it is stated, would be so great that they could not let such dwellings at anything like the low rentals which the tenants about to be turned out have been in the habit of paying. Further, the majority of the members of the Corporation are strongly opposed to the erection of tenement buildings, believing such a system does not tend to the quietude, comfort, or happiness of home life. Their only solution of the question, they believe, lies in the construction of healthy back-to-back houses, which it is said can be erected at a cost that will permit of them being let at comparatively small rentals. The Corporation recognise, however, that the Local Government Board of late years have not looked with a kindly eye upon back-to-back houses—in fact, that they have passed a by-law prohibiting them. It is with a view of obtaining some relaxation of this general rule to enable the Corporation to build "modern" back-to-back houses that the deputation was appointed.

CAPITAL AND LABOUR.

THE SUNDERLAND SLATERS' STRIKE.—The Sunderland slaters, who have been on strike for an advance of wages for three weeks, resumed work on the 5th inst. They sought an increase of 1d. per hour, to bring their remuneration from 9d. to 10d. per hour, but they have agreed with the masters to an advance of a halfpenny per hour, pending the further consideration of their application by the North of England branch of the Master Slaters' Association.

WAGES IN THE BIRMINGHAM BUILDING TRADE.—The workmen engaged in all but one of the different branches of the building trade in Birmingham made an application to the employers twelve months ago for an increase of wages. At the expiration of the six months' notice a halfpenny per hour was conceded, and the increase came into operation on April 1 last. The branch which did not participate in the increase was that of the bricklayers, but now they have applied for an advance, and it is considered probable that a concession of a halfpenny per hour will be made to them in April next. It is said, however, that some difficulty may arise as a result of the employers wishing to alter certain of the rules regulating the trade with respect to the employment of apprentices and the payment for work which is compulsorily done at night. It is doubtful whether the men will approve of the suggested alterations in the rules.—*Birmingham Post.*

LEGAL.

INFRINGEMENT OF ANCIENT LIGHTS AT ST. JOHN'S WOOD.

MANDATORY INJUNCTION GRANTED.

MR. JUSTICE KEKEWICH, in the Chancery Division, on the 7th inst., disposed of the case of Clifford *v.* Holt & Sons and others, which was an action by the plaintiff, the lessee and occupier of Manor Lodge, 2, Grove-end-road, St. John's Wood, for an injunction to restrain Messrs. Holt & Sons, builders, and the Duke of Buccleuch, Messrs. R. Broughton, W. Nicholson, V. E. Walker, and the Earl of Londesborough, the trustees of the Marylebone Cricket Club, from obstructing the plaintiff's ancient lights, and particularly the light to his greenhouse, by the new tennis and racquet court now in course of erection on Lord's Cricket Ground. It appeared that the back of the tennis court, about 30 ft. high, was, as the plaintiff alleged, built on the party wall on one side of the garden, and had been raised to such a height as to obstruct the necessary access of light to his greenhouse. It seemed that part of the new building had been erected partly on the garden of the adjoining house, 3, Grove-end, which had been purchased by the defendants. The plaintiff alleged

that he had previously enjoyed the access of plenty of light for his garden, greenhouse, and premises. The defendants contended that the light obstructed was trifling and unimportant, because there was ample light coming to the plaintiff's premises from the other points of the compass. The defendants admitted that the lights of the greenhouse were ancient lights.

Mr. Justice Kekewick held that the greenhouse was a "building" within Section 3 of the prescripsion Act, and that there had been a material obstruction of light by what the defendants had done. The evidence, said his Lordship, established that there had been a diminution of light of which the plaintiff was entitled to complain, as it was clear he could not get a convenient light elsewhere. He was of opinion that the plaintiff was entitled to a mandatory injunction to restrain the access of light to the greenhouse, but the injunction would be suspended for three weeks to enable the defendants to appeal if they desired to do so. If they gave notice of appeal within the three weeks then the injunction would be extended until the appeal was disposed of. His Lordship awarded the plaintiff the nominal sum of 5s. for the trespass and gave him the costs of the action.

Mr. Warrington, Q.C., and Mr. P. F. Wheeler, appeared for the plaintiff; and Mr. Renshaw, Q.C., and Mr. Methold for the defendants; Mr. A. O'Connor held a watching brief on behalf of the reversioner.

ACTION FOR INJURY TO A WALL AT BARKING.

THE case of Jones *v.* The Barking Urban District Council came before the Court of Appeal, composed of Lords Justices A. L. Smith, Rigby, and Collins, on the 8th inst., on the appeal of the plaintiff from the decision of a Divisional Court in favour of the defendants. The action in question was brought to recover damages for injury to a wall belonging to the plaintiff by the overflow from a sewer. It appeared that the plaintiff was the owner of certain houses in Loxford-road, Barking, at the bottom of which ran a brook and a sewer which was vested in the defendants, and ran along Loxford-road, having a dead end next the brook. In consequence of a heavy fall of rain which occurred in May, 1897, the storm-water filled the sewer and forced the water up a branch drain, flooded the plaintiff's land and washed away part of his wall which separated the land, upon which his houses were, from the brook. In 1896 there had been a previous overflow, and the wall was damaged and complaint was then made to the defendants, and since then the defendants had put in storm-openers in their sewers. The plaintiff contended that the defendants were negligent in not keeping the sewer in a proper condition, under Sections 15 and 19 of the Public Health Act, 1875, by reason of their not having storm-openers therein. The jury, in the Romford County Court, found that the defendants were not negligent in not having sufficient sewers to carry off the sewage; that the overflow arose from an extraordinary storm, which overflow could have been relieved by ordinary care, and that the defendants should, in 1896, after the accident, have had storm-openers put in the sewer. Upon these findings the County Court Judge entered judgment for the plaintiff for the amount claimed, but the Divisional Court, on the defendants' appeal, entered judgment for the defendants. The plaintiff now appealed.

At the conclusion of the arguments of counsel their Lordships affirmed the decision of the Divisional Court and dismissed the appeal with costs.

THE LONDON COUNTY COUNCIL AND THE FACTORY AND WORKSHOP ACT, 1891.

DISPUTE AS TO LIABILITY UNDER COVENANTS IN A LEASE.

THE case of Arding and Others *v.* The Economic Printing and Publishing Company came on the 12th inst. before the Court of Appeal on the appeal of the plaintiffs from the judgment of a Divisional Court of Queen's Bench giving judgment for the defendants reversing the judgment of the Judge of the City of London Court, who gave judgment for the plaintiffs. It appeared that the plaintiffs were the statutory "owners" of a factory in Bouverie-street, Fleet-street, and the defendants were their tenants under a lease bearing date October 30, 1891, for a term of twenty-one years from December 25, 1891, terminable, at the option of the lessees, at the expiration of seven or fourteen years at a rent of 700*l.* a year. The London County Council compelled the plaintiffs as such owners of the factory under Section 7 (2) of the Factory and Workshop Act, 1891, to provide in the factory means of escape from fire at a cost of 710*l.*, and the present action was brought to recover that sum from the defendants under the lease, which contained covenants on the lessee's part that they would during the term bear, pay, and discharge all rates and taxes assessed or charged upon the premises, and also bear and pay a fair share of all costs and expenses which the plaintiffs during the continuance of the term might be called upon to bear or pay from any separation, pulling down, rebuilding, or raising of any party wall, party fence wall, timber partition, or party arch, or incidental thereto, or in or about any drainage or sewerage at any time made under any Act of Parliament during the continuance of the term. The plaintiffs contended that they were entitled to recover the whole sum, under the first of these covenants, while the defendants contended that the expenses came within the second of the covenants, and that they (the defendants) were only liable for a proportion of the expenses. The Judge of the City of London Court gave judgment for the plaintiffs for the full amount under the first covenant. The Divisional Court, on appeal of the defendants, reversed this decision, and held that the words of the covenant were not sufficiently explicit to cover this exceptional charge created by a recent Act. Hence the present appeal of the plaintiffs.

At the conclusion of the arguments of counsel their Lordships affirmed the decision of the Divisional Court, and dismissed the appeal with costs.

THE CORPORATION OF SOUTH SHIELDS AND STREET WORKS.

THE case of Donaldson *v.* The South Shields Corporation came before Mr. Justice North, in the Chancery Division, on the 8th inst., on a motion by the plaintiff to restrain the defendants from proceeding with steps to take, under compulsory power, property abutting upon the intended frontage of a street the Corporation was widening under their private Act of 1895, which empowered them to make several improvements. The question to be decided was whether the defendants were entitled, in addition to the land actually required for widening a street, to take land adjoining and re-sell it at a profit, and so recoup themselves part of the expense of carrying out the authorised street works. The defendants gave the plaintiff notice to take premises belonging to her, which were delineated in the Parliamentary plans, and described in the book of reference which had been deposited, in accordance with standing orders, previously to the passing of the defendants' Act of 1895. The property in question abutted on the line of frontage of Fowler-street as intended to be widened, under the powers of the Act, but was outside the limits of deviation for the widening of the street itself.

In the result, Mr. Justice North held that on the particular words of the Act the Corporation were not entitled to take land outside the limits of deviation, and granted the injunction as asked.

EMPLOYERS' LIABILITY CASE.

HALL *v.* VEITCH.

AT the Newcastle County Court, on the 12th inst., his Honour Judge Greenwell had before him the case of Hall *v.* Veitch. The plaintiff, Mr. John Hall, a joiner, brought an action against Mr. Robert Veitch, builder, to recover damages under the Employers' Liability Act for injuries sustained by falling from a scaffold at the Erskine Presbyterian Church, Rye Hill, in March last, in consequence, he alleged, of the defective plant. His Honour heard the action, and found that the plant was not defective, and gave judgment for the defendant. Another action was now brought, in which the plaintiff claimed damages on the ground of negligent superintendence on the part of the defendant's servants in not having warned him, on the morning of the accident, that the scaffold was in process of demolition, and was therefore unsafe. This action was heard before a jury. Mr. Joel, instructed by Messrs. Dix, Warlow, & Hall, was for plaintiff; and Mr. Meynell, instructed by Messrs. Mather & Dickinson, was for defendants.

The plaintiff, John Milligan, Wm. Dixon, Joe Smart, Nicholas Maughan, and Mr. Farrer gave evidence, four of them repeating practically the evidence given by them in the original action, and at the conclusion

Mr. Meynell submitted there was no evidence of negligence against either of the defendant's servants.

Mr. Joel submitted that there was a case to be answered.

His Honour was inclined to the opinon held by Mr. Meynell, but he should take the opinion of the jury upon the matter, reserving to himself his right to say what should be done. If he was of opinion afterwards that there was no evidence, he should act upon that opinion.

His Honour, in summing up to the jury, said he could see no evidence to show negligence on the part of the defendant's servants, but it was for the jury to say, and they must not be satisfied with mere suspicion on their part.

The jury found for the defendant, and his Honour said he entirely agreed with the verdict.

Judgment was accordingly given for the defendant with costs.

MEETINGS.

FRIDAY, DECEMBER 16.

Architectural Association: Discussion Section.—Mr. S. W. Cranfield on "Buildings for Secondary and Technical Education." 7 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. Walter Daniel on "The Kentish Town Widening, Midland Railway." 8 p.m.

Crystal Palace School of Practical Engineering.—Announcement of list of Certificates awarded by the Examiners. 12 noon.

Glasgow and West of Scotland Technical College: Architectural Craftsman's Society.—(1) Mr. W. H. Baxter on "Shoring and Slapping." (2) Mr. John Bowman on "Difficulties with Foundations." 8 p.m.

SATURDAY, DECEMBER 17.

Sanitary Inspectors' Association.—(1) General Meeting at 6 p.m., when a Paper will be read by Mr. W. H. Grigg. (2) An Extraordinary General Meeting at 8 p.m., when the following resolution will be submitted on behalf of the Council:—"That the number of members in the Association shall be increased by the addition thereto of seven hundred (700) members beyond the present registered number."

Perth Architectural Association.—The drawings submitted in competition by the Design Class of the Association for last session will be exhibited within the lecture-room of the Natural Science Society, Tay-street. Also a collection of drawings and sketches lent by Mr. Robert J. Gildard, Edinburgh (late Vice-President of the Association), and others.

MONDAY, DECEMBER 19.

Royal Institute of British Architects.—(1) Mr. H. R. J. Burstall on "The Application of Electric Power to Practical Purposes in Buildings." (2) Mr. Bernard M. Drake on "Some Practical Hints on the Production and Use of Electricity for Lighting Country Houses." 8 p.m.

London Institution.—Mr. W. J. Russell, F.R.S., on "How to Produce a Picture on a Photographic Plate in the Dark," illustrated. 5 p.m.

Liverpool Architectural Society.—Mr. Talbot Kelly on "Saracenic Architecture," with limelight illustrations. 6 p.m.

Leeds and Yorkshire Architectural Society.—Mr. F. W. Bedford on "Sienna and Baldassare Peruzzi," illustrated. 6.30 p.m.

Bristol Society of Architects.—Business Meeting: Revision of By-laws and suggestions for generally improving the Society.

Northern Architectural Association.—Rev. D. H. S. Cranage, M.A., on "A Cistercian Abbey." 7.30 p.m.

TUESDAY, DECEMBER 20.

Institution of Civil Engineers.—(1) Paper to be further discussed: "The Ventilation of Tunnels and Buildings," by Mr. Francis Fox. (2—time permitting) Mr. John Handsley Dales on "High-speed Engines." 8 p.m. Special General Meeting (of Corporate Members) at 9.15 p.m., to consider, and, if approved, enact a Supplemental By-law.

WEDNESDAY, DECEMBER 21.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Edinburgh Architectural Society.—Annual business meeting. 8 p.m.

THURSDAY, DECEMBER 22.

Carpenters' Hall (London Wall).—Distribution of prizes by his Grace the Duke of Fife, K.T. 8.30 p.m.

Institution of Electrical Engineers.—The discussion on Dr. Lodge's paper on "Improvements in Magnetic Space Telegraphy," and on Mr. Evershed's paper, will be opened by Dr. Fleming and Mr. Preece, with experimental demonstrations. 8 p.m.

Edinburgh Architectural Society.—Annual dinner.

RECENT PATENTS:

ABSTRACTS OF ACCEPTED SPECIFICATIONS.

Open to opposition until January 23.

[1897] 23,843.—WOODEN MANTELS: *J. Parker.*—In development of his patent No. 12,854 of 1892 for interchangeable wood mantels the inventor surrounds the upper part of the jamb-bracket with a moulding from which projects an overhanging surface bored with clearance holes, on each of the jambs is secured a bracket to carry the overhanging moulding, the frieze-board is screwed to the back of the jambs, and the shelf is secured by wood-screws passing through the clearance holes; by another method, for the overhanging moulding is substituted a securing piece attached within the boxed jamb-bracket so as to connect the latter with the face of the securing piece slightly lower than the finished upper face of the bracket, the securing piece being provided with grooves or sinkings to be bored with clearance holes.

26,626.—DRAIN-TESTING APPARATUS: *Laura Sheppard.* This consists of a tube or hollow case, from 17 in. to 20 in. long, to hold smoke cases or drain testers. The case has an air-tight cap on one end and a tapered screw cap on the other end, the latter being a continuation of a smaller tube connecting with an indiarubber or similar tube soft enough to bend through a drain trap. On pulling a wire connected with a spring cap at the end of the flexible tube, the smoke is forced into the drain, and a wire around the tube prevents it from becoming flattened when forced through the trap.

27,534.—WATER-RESISTING PASTE-GUM OR COATING: *L. Bussy, H. Philippe, & P. Bussy.*—The material is obtained by dissolving celluloid (say, 200 parts), or softening it with acetic acid (1,000 parts), or with alcohol (400 parts), and adding resins, oils, mineral or organic salts, or similar substances (400 parts).

27,566.—HIGH PRESSURE WATER COCKS: *J. Whitfield.*—The cock is formed by applying a leather auxiliary cone-shaped valve or washer, similar to an inverted cup, upon the valve spindle above the ordinary valve seat. The greater the pressure of water against the valve or cup, the greater will be its expansion. The contrivance dispenses with a stuffing-box and screw threads in connexion with the valve spindle.

28,134.—ROPE TIGHTENING LEVERS: *D. J. Campbell.*—The claim is for a base plate having therein a segmental slot that approximately extends from a vertical line drawn to the centre on which the slot is described to a point at an angle from the line of about 100 deg., a lever working upon a fulcrum concentrically with the slot, a lug projecting from the lever into the slot, and a rope-knotter attached to the lever; the invention's object is to enable one to tie the knot in an instant and to give the rope an extra pull with the lever after the rope has been drawn as tightly as possible by hand and the knot has been tied.

28,342.—BALL AND FLOAT VALVES.: *W. Obee.*—The float-box is attached to the vessel to be fed by pipes at top and bottom of the vessel, and is so placed that rising or falling fluid, acting upon a float attached to a lever, closes

or opens a valve attached to a piston, whose top is open to the float-box; the areas, top and bottom, of the valve are to be equal.

28,842.—ARTIFICIAL STONE, CEMENT, &c.: *H. W. Gruner.*—The invention consists in finely grinding sand, or cork, or sawdust, or ashes, &c., and making the material into a plastic mass by the addition of certain chemicals—for a block one mètre square by two centimètres thick, four kilogrammes of finely powdered calcined magnesia, four kilogrammes of chloride of magnesium diluted in four litres of water, giving a solution of 30 deg. Beaumé, one quarter litre of solution of sulphate of zinc in water at 30 deg. Beaumé, seventy cubic centimètres of acetic acid, and thirty cubic centimètres of isinglass soap dissolved in methylated spirit. The slabs may be used for roofing purposes, cork powder for a substitute for linoleum, and sand, powdered granite or marble stone for artificial stone.

28,970.—ROAD SCARIFIER: *W. Lambert.*—This is fitted with an oscillating trunnion-tumbler furnished with two series of adjustable tines, of which, at the end of each bout, by reversing a draw or push bar, the forward series is released, while the diametrically opposite series is brought into operation. As the machine travels from one locality to another the tines are retained in a horizontal position by the push bar secured to a catch; the trunnion-tumbler is mounted centrally, in order to concentrate the machine's main weight upon the tines when they are at work; the tines' pitch is adjusted and regulated by a cam and an adjustable lug or die, and to obviate the engine passing and re-passing at each bout, the trunnion-tumbler may be connected to the draw bar by a knuckle joint.

29,480.—TAP OR VALVE: *C. W. Cockburn.*—The tap or valve is constructed with a long conical plug, adapted to be moved lengthwise into and out of a corresponding seat; between the seat and plug is a conical ring or washer of leather or similar material.

[1898.] 317.—WATER VALVES, &c.: *J. Jones.*—For cisterns and similar vessels, wherein the liquid to be delivered is controlled by a plunger seated on the supply pipe, the inventor seeks to ensure that the plunger and diaphragm shall always move together; he inserts a rubber or other flexible diaphragm between the two parts of the valve casing, and extends the plunger through the diaphragm, its inner end having a facing to make a tight joint with the end of the supply pipe, the facing may be held by an internal flange formed upon the plunger's inner end, or it may be held thereon by a flanged collar. In the latter case the end of the plunger would be threaded to receive the flanged collar, so that the diaphragm is tightly gripped between the collar and a shoulder of the plunger.

593.—APPLIANCES FOR MOVING SOFT UNDRIED BRICKS: *Blackman Ventilating Company, W. W. Wardle,* and *W. Tattersall.*—The board or table on which the divided bricks are received (after the column of clay is extruded from a die) is made of separate boards, each about a brick's width, fitted to slide in guides, each board is connected to the next one by a slotted link, and has a handle, on pulling which all the boards with bricks upon them are separated as far as the link-slots permit. The bricks, thus separated, are then pushed on to a board upon which they are carried away to be dried, and another board is placed in position.

1,025.—FLANGED PIPE JOINT: *P. E. Preschlin.*—The novelty lies in forming a flanged pipe joint by widening the mouths of the pipes, fitting therein rings with rounded ends, bending the edges of the pipe mouths over the rounded ends, fitting outside the widened parts of the pipes flanged rings having nuts and bolts, interposing a packing ring between the pipes' rounded ends, and drawing together the flanged rings by screwing up the bolt-nuts.

1,152.—BRICKS AND TILES FOR BUILDING PURPOSES: *C. H. Collins.*—The improvement consists in fashioning a brick so that it shall conceal and protect the interstices of the mortar or cement that binds the courses; the brick has a fillet or bead on two or more of its edges; for stretchers the fillet or bead is formed on the brick's front side and runs round two sides or edges; for headers, one end is similarly fashioned, or in the case of a wall, one brick in thickness, the fillet would be formed at each end of the brick.

2,586.—COMBINED LAMP-POST AND HYDRANT: *W. Jones.*—For facilitating the finding of the nozzles, and so disposing and placing hydrants that they may be found when in darkness, the inventor arranges inside the hollow base of a street lamp a stand pipe or hydrant, which consists of a vertical water pipe connected directly with the main, and cross tubes at its upper end to pass through the lamp-post's sides, the ends of which tubes form nozzles for hose.

4,574.—VENTILATORS: *C. Claxton.*—A square shaft, from 15 in. to 30 in. in diameter extends about 4 ft. above the roof, and is carried down to the ceiling's level, the inlet is reduced in size by tapering the bottom of the shaft, four syphon tubes, made bell-mouthed at top and bottom, are affixed to the shaft, in their top mouths are placed fans protected by wire netting, the bottom mouths have lids to be worked by cords.

9,748.—STEP LADDERS: *N. Holborow, A. Holborow, & A. Paice.*—The steps consist of a light ladder to which the back stay is pivotted or hinged at the top; on the rounds are hinged wide treads, the back parts of the treads are connected together by a strip of wood or metal at the sides, so hinged that the treads turn freely up or down together, the strips are connected with arms or rods to the back stay; when the back stay is closed it pushes up the strips and closes the treads by tilting them up edgewise.

12,180.—COWL OR CHIMNEY POT FOR CURING SMOKY CHIMNEYS: *W. Bevitt.*—When the wind is baffling downwards it strikes a cone within the cowl's top, rushes past an aperture, beneath the cone, through which the smoke escapes, and so causes a suction or up-draught: if the wind blows steadily, or baffles upwards, the same effect is produced. The cone and its shield may be supported by flat ribs, to leave passages for smoke, air, and the chimney brush.

15,140.—COMPOSITION FOR REMOVING PAINT OR VARNISH: *G. Zonca & Co.*—The inventors claim that the effects of caustic alkali can be completely removed, and the dissolving force on the dry varnish or oil colour layer also greatly increased by the use of emulsions of mineral oils in the solutions of the caustic alkali; a paste can be made by mixing therewith some brick dust, powdered pumice stone, &c.; the colour mordant is made thus: 20 kilogrammes of caustic soda (98 per cent.) are dissolved in 100 litres of water, the solution is mixed with 20 kilogrammes of mineral oil, and all is stirred together, with 20 kilogrammes of sawdust.

18,969.—COMPOSITE PIPES, AND APPARATUS THEREFOR: *E. J. Braddock.*—The composite non-corrodible pipe is made up of two or more concentric tubes, one of which is composed of comparatively inexpensive and strong although easily corrodible metal with a high melting point, and a protecting tube or tubes of metal having a low melting point, commonly known as non-corrodible metal; the composite pipe is produced by chemically cleansing the inmost tube by pickling in the usual manner, treating it with a liquid flux, such as chloride of zinc, placing it upon a mandrel, and immersing it in a tank of molten non-corrodible metal, the tube is then fed forwards through a chilling die at the end of the tank wherein a composite pipe is formed with a tubular covering of the non-corrodible metal, built upon one or both surfaces of the tube as fast as the latter advances into the chilling portion of the die. The union between the tubes is a molecular union similar to that which is effected by tinning, galvanizing, brazing, or soldering.

21,729—NAILS: *A. E. Appleton.*—The invention specially relates to the type of nail used for fixing corrugated metal to roofs, &c.; in order that the nails may be used again after they have been pulled out, they are made so that they may be withdrawn by nippers, or a bifurcated hammer-head, or other form of lever. The nail has a double head, or has a head projecting above the flange, disc, or washer, which is the characteristic feature of the said nail.

NEW APPLICATIONS.

November 28—December 3.

25,038, R. C. Craig, Instrument for Dividing Circles into any Number of Given Parts. 25,044, Milne & O'Connor, Coin-freed Gas Meters. 25,053, Jolliffe & Deacon, Jointing Rings or Washers for Pipe Flanges. 25,058, H. G. Solomon, Spring Automatic Fuse Replacer for Electrical Cut-outs. 25,063, W. J. Walsh & Others, Circular Sectional Hot Water Heaters. 25,066, Naylor & Harrison, Automatic Fire Extinguisher and Alarm. 25,069, Seats of Water and other Similar Closets. 25,081, T. Van Kannel, Revolving Doors. 25,085, J. W. T. Brain, Flushing Cistern. 25,087, W. Crudgington, and 25,221, J. J. Rathbone, Arc Lamps. 25,093, J. H. Hannay, Swing Gates. 25,099, P. G. Kelly, Gripping Devices for Safety Cages for Mines and Buildings. 25,109, Brown & Simpson, Electrical Hoisting Machinery. 25,134, F. H. Fisher, School Desks. 25,155, T. W. James, Artificial Marble, Granite, &c. 25,160, C. Barnett, 25,258, P. Harrison, 25,291, N. A. Aubertin, 25,297, P. Bucher, 25,317, G. Dillberg, 25,368, Watts, 25,449, W. J. Rodwell, 25,452, Smith & Doman, and 25,493, A. Frank, Acetylene Gas Generators. 25,162, The Universal Lock Company, Key Combination Locks. 25,167, I. Brustmann, Combination Furniture. 25,170, A. Krüger, Chimney Shafts or Flues. 25,180, W. A. Drake, Arithmetical Calculators. 25,187, E. J. Wakeling, Combined Water-Van and Road-Sweeping Machine. 25,195, J. McDonald and Others, Smoke-Consumers. 25,203, J. Duckett & Son & J. Duckett, Top-Flushed Slop Water-Closets. 25,209, E. Pilous and Others, Production of Gas from Town Refuse and Sweepings. 25,218, F. G. S. Ham and Others, Street Gulley and Similar Gratings. 25,234, W. Foster, Filters and Filter Beds for Sewage Purification. 25,241, T. Downie, Winches. 25,247, W. H. Sherburn, Fireplaces. 25,249, Stevenson & Toogood, and 25,336, Barnes & Cotton, Guards for Circular Saws. 25,250, J. Adie and Others, Lamps for Heating and Lighting Purposes. 25,251, the late A. Massel, Calculating Appliance. 25,260, H. Nunns, Electricity Meters. 25,263, A. T. Handley, Combination Disinfecting Flush Tank. 25,264, H. Callow, Window-Sashes. 25,267, J. C. Fergusson, Circles for Surveying and Levelling Instruments. 25,271, W. Boby, Water Heaters and Purifiers. 25,275-6, P. Carré, Fireproof Paint or Composition and Fire Extinguishers. 25,277, G. Nicolini, Water Gas. 25,304, R. Koepp & Co., Artificial Stones. 25,311, C. Carduck, Window Frames, Sashes, and Sash-Bars. 25,316, A. Lacolle, Smoke-Consuming Stove. 25,326, T. Thornton, Gauges for Saw Fences, &c. 25,327, L. Ridout, Electrical Terminal. 25,330, J. Hogarth, Measuring Viscositus and Tensile, Torsional, or Breaking Strains. 25,335, T. Scotland, Tubes for Heating and Cooling Dwellings, Halls, &c. 25,342, G. Hunt, Water-Waste Preventers Syphon Discharge. 25,344, Edwards & Thomas, Picks and the Fastening of Picks, Tools, &c. 25,345, J. Murrie, Water Regulating Cranes for Domestic and Sanitary Purposes, and Apparatus for the same. 25,352, J. Morgan, Safety Gear for Colliery Cages and other Hoists or Lifts and Apparatus for the same. 25,354, Brodie & Prior, Fire Grates. 25,359-60, C. Marson, Facing Walls and other Surfaces with Glass; and Artificial Stone. 25,369, L. H. Karger, Compressed Gas Lighting installations. 25,381-2, G. Roberts, Stoves for Burning off Old Paint, and Taps or Cocks. 25,383, C. A. Atkinson, and 25,409, C. A. Sahlstrom, Treatment or Purification of Sewage. 25,384, T. Whitaker, Steam Derrick Cranes and Excavating Apparatus. 25,390, W. H. Booth, Pumping Machinery. 25,400, R. Jewhurst, Stoves or Fire-places. 25,413, R. Beacock, "Loose Bar False Fire Grate." 25,414, J. T. Hustwit, Smoke Ejector and Down Draught Preventer. 25,420, Jones & Lee, Soot Catcher Clip. 25,437, J. H. Cartland, Casement Opening and Closing Mechanism. 25,443, T. Cooper, Plumbers' and Similar Joints. 25,454, Klein & Brench, Well Pumps. 25,459, A. G. Thomas, Lashing and Securing Scaffolding, &c. 25,472, Rockhills, Tubular Boiler for Fireplaces or Stoves. 25,484, A. J. White, Door Handles. 25,490, Preston & Jakeman, Side Lights. 25,500, G. W. Sivewright, Cattle Stall and Similar Fittings. 25,514, W. Syderham, Micrometer Gauges for Interchangeable Work. 25,523, R. A. Matthews, Varnish, Stain, Paint, and other Cans. 25,535, L. Barlow, Method of Attachment to Lath and Plaster, &c. 25,543, C. Davis, Locks and Latches. 25,545, J. Altmann, Cord and similar Holders. 25,546, W. A. P. Werner, Metallisation of Surfaces. 25,548, M. R. Ruble and Others, Apparatus for Withdrawing Shavings, Dust, &c., and for Ventilation. 25,557, C. L. Keltridge, Lamps. 25,561, J. Oppelt, Chamber Closets. 25,565, M. Page, Water-closet Seats. 25,569, R. Machold, Pulleys. 25,575, F. T. Brearley, "Manufacture of Prismatic Glass Refracting Means." 25,576, Emanuel & Sons & T. Crump Working the Valves of Baths, &c.

SOME RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

Nov. 28.—By J. WALTER NEIGHBOUR.

Holloway.—149, Junction-rd., f., r. 60*l.*	£1,040
Clerkenwell.—20 to 28 (even), Northampton-rd., u.t. 30½ yrs., g.r. 28*l.*	1,240
Wandsworth.—1 and 3, Iron Mill-yard, u.t. 44½ yrs., g.r. 3*l.*	150
28 to 33, Iron Mill-pl., u.t. 44 yrs., g.r. 7*l.* 10s.	550
Islington.—6 and 24, Compton-ter., u.t. 18 yrs., g.r. 20*l.*, r. 155*l.*	1,060
Victoria Pk.—5, Approach-rd., u.t. 55 yrs., g.r. 5*l.*, r. 46*l.*	£560
Whitechapel.—64, 66, and 68, Wentworth-st., u.t. 40 yrs., g.r. 30*l.*, r. 116*l.* 12s.	1,150
112 to 115, Old Castle-st., with synagogue and other premises in the rear, u.t. 40 yrs., g.r. 30*l.*, r. 95*l.*	850
Commercial-rd. East.—59 and 61, Morgan-st., f., r. 44*l.* 4s.	760
Clerkenwell.—36 and 46, Warner-st., f., r. 100*l.*	1,660
Mile End-rd.—No. 628, f., r. 75*l.*	1,520
St. Luke's.—56, Old-st., f., r. 68*l.* 5s.	1,850

By WYATT & SON (at Arundel).

Arundel, Sussex.—3 to 6, Gatwick-ter., u.t. 97 yrs., g.r. 3*l.* 12s.	520

November 29.—By DIXON & SONS.

Mitcham, Surrey.—Upper Green, six freehold shops, r. 170*l.*	2,300
Pimlico.—34 and 36, Gillingham-st., f., r. 92*l.*	1,390
Belgravia.—53, Chester-ter., u.t. 22½ yrs., g.r. 5*l.*, e.r. 55*l.*	480

By DUNCAN & KIMPTON.

Stroud Green.—50, Hanley-rd., f.	1,150
Old Kent-rd.—319, East-st., f., r. 24*l.*	465
Holloway.—39, Mercers-rd., u.t. 68½ yrs., g.r. 10*l.*, r. 60*l.*	740

By HERRING, SON, & DAW.

Streatham.—3 and 4, Hope Cottages, f., r. 39*l.*	455

By LINNETT & LANE.

Harlesden.—37, Nicoll-rd., u.t. 73¾ yrs., g.r. 10*l.* 10s., r. 52*l.*	600
234, High-st., u.t. 86 yrs., g.r. 7*l.* 10s., r. 55*l.*	655
Willesden.—29, Shrewsbury-rd., u.t. 91 yrs., g.r. 6*l.* 5s., r. 32*l.*	300

By NEWELL & HAMLYN.

New Cross.—42, Brockley-rd., u.t. 30½ yrs., g.r. 4*l.* 1s. 6d., r. 34*l.*	285

By ROBSON & CO.

Wandsworth.—154 and 154a, Wandsworth-rd., u.t. 80½ yrs., g.r. 21*l.*, r. 120*l.*	1,450

By RUTLEY, SON, & VINE.

Holloway.—22, Hargrave-pk., u.t. 63 yrs., g.r. 7*l.* 7s., e.r. 45*l.*	410
Hampstead-rd.—16, Tolmer's sq., u.t. 63 yrs., g.r. 10*l.*, r. 65*l.*	655
36, Ampthill-sq., u.t. 44½ yrs., g.r. 12*l.*, e.r. 85*l.*	640
Bowes Pk.—26 to 34 (even), Whittington-rd., u.t. 82 yrs., g.r. 31*l.* 10s., r. 152*l.*	1,485
Kentish Town.—7, Thurlow-ter., u.t. 67 yrs., g.r. 5*l.*, r. 30*l.*	295

By WESTON & SONS.

Brixton.—42 and 44, St. James-rd., u.t. 24 yrs., g.r. 12*l.*, r. 93*l.*	530
Lewisham.—4, Slaithwaite-rd., u.t. 61 yrs., g.r. 4*l.* 10s., e.r. 45*l.*	410
Regent's Pk.—3, Chalcot-cres., f., e.r. 46*l.*	700

By C. & H. WHITE.

Blackfriars.—41, Gray-st., f.	440

By HEPPER & SONS (at Leeds).

Leeds, Yorks.—17 and 19, Mount-villas, and a plot of land adjoining, area 3,713 yds., f.	1,240
31, 33, and 35, Wade-lane, and 7, Wade-st., f.	3,110

By H. J. BROMLEY (at Norwood).

Norwood.—Rothschild-rd., five plots of building land, f.	665
Knight's Hill-rd., a plot of building land, f.	185

November 30.—By WILLIAM HOUGHTON.

City of London.—Aldersgate-st., f.g.r. 550*l.*, reversion in 61 yrs.	15,000
Strand.—1 to 9, Thanet-pl., area 7,800 ft., f., r. 550*l.*	20,500
Chancery-lane.—14, Cursitor-st., f., r. 25*l.*	950

By ALFRED RICHARDS.

Enfield.—Southbury-rd., Bury Farm, 151 a. 0 r. 29 p., f., r. 600*l.*	27,000
Southbury-rd., a freehold building estate, 15 a. 1 r. 27 p.	5,500
Enfield Highway.—Brick-lane, freehold fruit and market garden land, 26 a. 1 r. 0 p.	4,300
Tottenham.—670, High-rd., f., r. 45*l.*	955
89 and 91, High Cross-rd., f.	635

By T. W. CARPENTER.

Hampstead-rd.—21 and 22, Exmouth-st., u.t. 21 yrs., g.r. 10*l.* 10s., r. 84*l.* 12s.	495
Exmouth-st., i.g.r. 25*l.* 10s., u.t. 21 yrs., g.r. 5*l.* 10s.	275
19, Harrington-st., u.t. 39 yrs., g.r. 5*l.* 10s., r. 50*l.*	620

By DAWSON, SON, & TERRY.

Belgravia.—30, Cliveden-pl., u.t. 25½ yrs., g.r. 10*l.*, r. 110*l.*	1,450

By HUMBERT & FLINT.

Hampstead.—51 and 53, Netherhall-gdns., f., r. 235*l.*	3,780
Battersea.—15 and 17, Albert Bridge-rd., u.t. 79 yrs., g.r. 20*l.*, r. 88*l.*	890
12, Foxmore-st., u.t. 79 yrs., g.r. 8*l.*, r. 44*l.*	420
1, 2, 4, and 8, Kersley-st., u.t. 79 yrs., g.r. 32*l.*	1,240
27 to 45 (odd), Kersley-st., u.t. 79 yrs., g.r. 70*l.*	2,875
2 to 8, Kersley Mews, u.t. 79 yrs., g.r. 35*l.*	1,160

By NEWMAN & NEWMAN.

Lambeth.—62, Oakley-st., f.	460
Camberwell.—2 and 4, Blake's-rd., u.t. 68 yrs., g.r. 10*l.* 10s., r. 48*l.*	380
Fulham.—Stamford-rd., i.g.r. 20*l.* 8s., u.t. 53 yrs., g.r. 7*l.* 10s.	225

By C. C. TAYLOR & SON.

Mile End.—43 to 62, Ely-ter., u.t. 12½ yrs., g.r. 70*l.*	880
Forest Gate.—24, Odessa-rd., f.	290

By R. TIDEY & SON.

Enfield Highway.—Maud-villas, f.g.r. 19*l.* 19s., reversion in 82 yrs.	500
Tottenham.—Grove Park-rd., f.g. rents 18*l.* 6s., reversion in 84 yrs.	425
Canonbury.—19, Leconfield-rd., u.t. 50¾ yrs., g.r. 3*l.*, r. 34*l.*	380
De Beauvoir Town.—25 and 27, Church-rd., u.t. 20 yrs., g.r. 9*l.*, r. 76*l.*	480
Islington.—18, Orchard-st., u.t. 30 yrs., g.r. 7*l.*, r. 35*l.*	240

By MOSS & JAMESON.

Sheerness, Kent.—Mile Town, &c., f.g. rents 88*l.* 17s. 2d., subject to various lives, most of which are renewable on a fine of 7 yrs. g.r. for each life re-stated	3,500

By ALFRED RICHARDS (at Tottenham).

Stamford Hill.—32, The Crescent, u.t. 80 yrs., g.r. 6*l.*	180
Tottenham.—7, 10, and 12, Gothic-villas, f., r. 60*l.* 4s.	765

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Villas, Ovenden, Yorks	.....	M. Hall, Archt. 29, Northgate, Halifax	Dec. 20
Road Works, Bank-street	Rawtenstall (Lancs.) Corp.	A. W. Lawson, C.E. Town Hall	do.
Streets	Bury (Lancs.) Corp.	Borough Engr. Bank-st. Bury	do.
Club Premises, Baxter Gate, Loughborough	Club Co. Ltd.	W. T. Hampton, Archt. Swan-st. Loughborough	do.
Stabling, &c. Pannal-st. Bradford	Great Horton Indus. Soc. Ltd.	J. Drake & Son, Archt. Queensbury	do.
Additions to Workhouse	Belfast Union	Young & Mackenzie, Engr. Donegall-sq. East Belfast	do.
Pipe Laying (6 miles)	Elie (N.B.) Local Authority	Belfrage & Carfrae, C.E. 1, Erskine-pl. Edinburgh	do.
Cottage, Fylingdales, Yorks.	.....	J. Ledingham, Archt. Bank Chambers, Bradford	do.
*Kerbing, Channelling, and Paving	Tottenham U.D.C.	P. E. Murphy, 712, High-road, Tottenham	do.
*Sewering	Frimley U.D.C.	Surveyor's Office, High-st. Camberley	do.
Road Works, Alergate	Durham Co-op. Soc. Ltd.	G. Ord, Archt. 16, The Avenue, Durham	Dec. 21
*Iron Bridge at Infirmary	Hackney Union	W. A. Finch, 76, Finsbury-pavement, E.C.	do.
Church, Ballymacarrett, Belfast	.....	J. J. Phillips & Son, Archt. 61, Royal-avenue, Belfast	do.
Additions to Imperial Hotel, Barnstaple	.....	W. C. Oliver, Archt. Barnstaple	do.
Water Supply Works	Ulverston R.D.C.	Surveyor, Union Offices, Ulverston	do.
Sewage Works near Wigan	Abram U.D.C.	Heaton & Co. C.E. King-st. Wigan	do.
Street Works	Blackpool Corp.	J. Wolstenholme, C.E. Town Hall	do.
1,000 tons Road Stone	Woking U.D.C.	G. J. Wooldridge, Surv. Bank-chmbrs. Woking	do.
Two Houses, Padstow, near Whitehaven	.....	J. S. Moffat, Archt. 53, Church-st. Whitehaven	do.
Alterations to Business Premises, Broad-street, Welshpool	J. Eddowes	F. H. Shayler, Archt. Welshpool	do.
Two Shops and Houses, Fartown, nr. Huddersfield	.....	J. Berry, Archt. 9, Queen-st. Huddersfield	do.
*Road Materials	Commrs. H.M. Works	Offices, Storey's Gate, S.W.	Dec. 22
Bridge over River Dee	Edeyrnion R.D.C.	H. G. Johnson, Engr. Wrexham	do.
Sewers	Portslade-by-Sea U.D.C. (Sussex)	C. O Blaber, C.E. 64, Ship-st. Brighton	do.
Additions to Church at Asylum, Rainhill	Lancashire Asylums Board	J. Gornall, County Asylum, Rainhill	do.
Offices, Birmingham	Midland Sporting News	Owen & Ward, Archt. 71, Colmore-row, Birmingham	Dec. 23
Additions to Boot & Shoe Inn, Birchencliffe, near Huddersfield	.....	J. Berry, Archt. 9, Queen-st. Huddersfield	do.
Hotel, Waterloo-place, Londonderry	Mrs. Gibson	Forman & Aston, Archts. Royal-avenue, Belfast	do.
Extension of Water Mains	Carlisle R.D.C.	G. Armstrong, Surv. 24, Bank-st. Carlisle	do.
Waterworks	Edinburgh Water Trustees	J. Wilson, Engr. 72a, George-st. Edinburgh	do.
Block of Houses, Stump Cross, Shibden, Halifax	.....	J. F. Walsh, Archt. Halifax	do.
Wall at Cemetery, Wales, near Sheffield	.....	Rev. G. L. M. Rees, The Vicarage, Wales	Dec. 24
Rebuilding 8, King-street	Misses Adair	J. S. Moffat, Archt. 53, Church-st. Whitehaven	do.
Villas, Whitehead, co. Antrim	.....	J. Russell, C.E. 16, Waring-st. Belfast	do.
Offices, &c.	Windermere U.D.C.	R. Walker, Archt. Windermere	Dec. 27
Police Station, Blaenau Festiniog	.....	T. T. Rees, Archt. Hamilton-chmbrs. Birkenhead	do.
Additions to Pariah Church, Morebottle, N.R.	.....	Hardy & Wright, Surv. 74 George-st. Edinburgh	do.
Road Works, Braidley-road	Bournemouth T.C.	F. W. Lacey, Surv. Town Hall	do.
Alterations to the Commercial Hotel, Wadebridge	.....	Manager, Commercial Hotel, Wadebridge	do.
Outfall Sewer	Glasgow Corp.	J. Lindsay, City Chambers, Glasgow	Dec. 28
Widening Victoria-street	Basingstoke T.C.	G. Fitton, Surv. Town Hall	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
*Sewering, Levelling, Paving Channelling, &c. Road	Kingston-on-Thames Corp.	Surv's. Office, Clattern House, Kingston-on-Thames	Dec. 28
*Factory and other Buildings	Devizes Bacon Co.	Norris & Hancock, 16, Market-place, Devizes	do.
*Widening Road	Bromley U.D.C.	Surveyor, Council Offices	Dec. 29
*Diversion of Culvert and other Works	do.	do.	do.
Engine House, &c. Denton	Newhaven and Seaford Water Co.	F. S. Courtney, C.E. Broad Sanctuary-chmbrs. Westminster, S.W.	Dec. 30
*Various Works connected with Tram ways	Hull Corp.	City Engineer, Town Hall,	do.
*York Stone	Folkestone Corp.	Surv's Office, Dover-road, Folkestone	Dec. 31
Walls, &c. North Parade	Dartmouth U.D.C.	T. O. Veale, Surv. Dartmouth	do.
*School Buildings	Merioneth County Schools	J. E. Evans, Archt. Barmouth	do.
Sewers	Taunton T.C.	J. H. Smith, C.E. Town Hall	Jan. 1
Workhouse	Nottingham Union	A. Marshall, Archt. King-st. Nottingham	Jan. 3
*Iron and Stoneware Pipe Sewers	Epping U.D.C.	Urban Smith, 41, Parliament-st. S.W.	do.
*Making-up Roads	Wanstead U.D.C.	Surveyor, Council Offices, Wanstead, N.E.	Jan. 6
*Enlarging Hospital, Plaistow	Cty. Boro. of West Ham	E. T. Hall, 57, Moorgate-street, E.C.	Jan. 7
Infirmary Additions	Horsham Union	C. H. Burstow, Archt. 6, West-st. Horsham	Jan. 9
*Inland Revenue Office, Bradford	Commrs. H.M. Works	Office, Storey's Gate, S.W.	Jan. 10
*Two New Wards, &c. at Asylum	Derby County Asylum	J. S. Story, County Offices, Derby	do.
Public Baths	Selby U.D.C	W. Hanslock & Son, Archt. Branch-rd. Batley	Jan. 11
*Pulling Down and Removal of Buildings	Islington Vestry	Vestry Hall	do.
Additions to Asylum, Knowle, Fareham	Hants County Council	W. J. Taylor, County Surv. Winchester	Jan. 16
*Concrete Foundations, Brick, Steel, and Concrete Superstructures, Wards, Boiler House, Chimney Shaft, &c. at Asylum	County of Southampton	W. J. Taylor, County Sur. The Castle, Winchester	do.
*Greenwich Footway Tunnel under the Thames	London C.C.	Engrs. Dept. Spring Gardens, S.W.	Jan. 24
Schools, Newmarket-road	.....	T. D. Lindley, Archt. Ashton-under-Lyne	No date
Alterations to Mill, Wash-lane, Bury, Lancs	.....	J. Sellers & Son, Archt. Union-chambers, Bury	do.
Four Houses, Park-av. Harrogate	A. Sutcliffe	Bland & Bown, Archt. North Park-rd. Harrogate	do.
Two Houses, Bridlington	J. H. Northorp	D. Petch, Archt. Victoria-chambers, Scarborough	do.
Five Houses, Bulwell, Nottingham	.....	F. C. Martin, C.E. Angel-row, Nottingham	do.
Alterations to Premises, Long-row, Nottingham	Messrs. Pearson Bros.	C. N. Holloway, Archt. Nottingham	do.
Eighteen Houses, Thornhill	Dewsbury Industrial Soc. Ltd.	Holtorn & Fox, Archt. Dewsbury	do.
Additions to Pump House Hotel, Llandrindod Wells	.....	Scott, Deakin & Co. Archt. Shrewsbury	do.
Lodge, Victoria Park	Leamington T.C.	F. G. Cundall, Archt. 41, Parade, Leamington	do.
*Work in connexion with Enlargement of Electric Station	Islington Vestry	Vestry Hall	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Foreman of Works	Canterbury Corp.	42s. weekly to commence	Dec. 21
*Instructor for Technical School	Lagos Government (W. Coast of Africa)	300l. per an. free quarters, passage paid	Dec. 29
*Borough Surveyor	Penzance Corp.	200l. per an. and residence	Jan. 4
*General Working Foreman	Chertsey U.D.C.	.....	No date

Those marked with an asterisk (*) are advertised in this Number. ***Competition, p. —.*** ***Contracts, pp. iv. vi. viii. & xxi.*** ***Public Appointments, pp. xix. & xxi.***

By LOUND & HOWITT (at Masons' Hall Tavern).

Wandsworth Common.—Trinity-rd., "The County Arms" p.-h., u.t. 13½ yrs., r. 500l., with goodwill £6,400

By F. S. PRIEST (at Harlesden).

Harlesden.—83, Steele-rd., u.t. 96 yrs., g.r. 10l., e.r. 52l. 300

47 and 49, Fortune Green-rd., u.t. 91 yrs., g.r. 11l., r. 58l. 480

Acton-lane, Sandown, u.t. 85½ yrs., g.r. 7l. 10s., e.r. 55l. 590

Willesden.—1 and 2, Church-rd., f., r. 72l. 16s. .. 1,130

By R. DALTON (at Brampton).

Brampton, Cumberland.—Denton Foot Estate, 50 a., f. 2,425

December 1.—By JENKINS & SONS.

Forest Gate.—5 and 6, Norfolk-ter., u.t. 93 yrs., g.r. 14l. 14s., r. 70l. 585

Plaistow.—9, Caistor Park-road, u.t. 85 yrs., g.r. 5l. 150

By PERCY MATTHEWS & MATTHEWS.

Hampstead —16, High-street, c., r. 105l. 1,800

11 and 12, Thurlow-rd., u.t. 52 yrs., g.r. 18l. 18s., r. 240l. 2,000

1 and 3, Wildwood-ter., u.t. 68 yrs., g.r. 8l., r. 85l. 855

1 to 7, Wildwood-grove, u.t. 68 yrs., g.r. 17l. .. 1,800

Whitechapel.—Wellclose-sq., f.g.r. 10l., reversion in 95 yrs. 330

Poplar.—17, Cotton-st., f., r. 26l. 265

By SAUNDERS & SON.

Kensington.—6, Victoria-rd., u.t. 19¾ yrs., g.r. 75l., r. 150l. 750

Pimlico.—13, Cumberland-st., u.t. 29½ yrs., g.r. 9l., r. 50l. 375

Walthamstow.—44, Elmsdale-rd., u.t. 77 yrs., g.r. 5l. 10s., r. 26l. 175

By J. F. STONEHEWER.

Fulham.—308 and 310, Lillie-rd., f., r. 80l. 1,260

Battersea.—34 to 44 (even), Wayford-st., u.t. 77 yrs., g.r. 30l. 1,405

199, Maysoule-rd., f. 365

Wandsworth.—28 and 30, Southfields-rd., u.t. 79 yrs., g.r. 10l. 9s. 8d., r. 70l. 595

By EDWIN EVANS (at Clapham Junction).

Putney.—10 to 28 (even), Weimar-st., f. £2,250

Fulham.—55 to 61 (odd), Protheroe-rd., u.t. 78½ yrs., g.r. 20l. 1,205

Battersea.—1, 2, 3, and 4, Boutflower-rd., u.t. 86 yrs., g.r. 40l., r. 200l. 1,920

Wandsworth.—460 to 470 (even), Wandsworth-rd., u.t. 89 yrs., g.r. 33l., r. 183l. 10s. 1,345

11 to 23 (odd), Rashleigh-st., u.t. 68½ yrs., g.r. 25l. 4s., r. 218l. 8s. 1,040

40, Lebanon-gardens, u.t. 79 yrs., g.r. 7l., r. 38l. 405

1, 5 to 11, and 15 to 26, Cotman-st., u.t. 78 yrs., g.r. 78l. 10s. 3,815

Bramford-rd., &c., i.g.r. 109l. 10s., u.t. 78 yrs., g.r. 66l. 12s. 750

December 2.—By PERCIVAL HODSON.

Camden Town.—Prebend-st., i.g.r. 65l., u.t. 21 yrs., g.r. 22l. 7s. 405

Barclay-st., i.g.r. 36l. 6s., u.t. 21½ yrs., g.r. 5l. 10s. 280

Regent's Pk.—Munster-sq., &c., i.g.r. 64l. 15s., u.t. 24 yrs., g.r. 26l. 455

Camden Town.—Prebend-pl., i.g.r. 14l., u.t. 23 yrs., g.r. nil 680

By ALLEN & GARNER.

Holloway.—29, Langdon-rd., f., r. 50l. 660

By S. A. SORENSEN.

Kingsland.—49, Tottenham-rd, u.t. 19 yrs., g.r. 2l. 12s. 6d. 125

Stoke Newington.—48, Spencer-rd., u.t. 53 yrs., g.r. 5l. 210

Bethnal Green.—46, 48, and 50, Bacon-st., u.t. 96 yrs., g.r. 125l. 2,675

Forest Gate.—57, Trumpington-rd., u.t. 80 yrs., g.r. 4l. 10s., r. 32l. 305

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G. ton	8/0/0	0/0/0
Teak, E.I. ....load	10/10/0	15/10/0
Sequoia, U.S.ft.cu.	1/9/0	2/3/0
Ash, Canada, load	3/17/6	5/5/0
Birch, do.	3/0/0	5/0/0
Elm, do.	4/12/0	5/15/0
Fir, Dantsic, &c..	2/0/0	4/0/0
Oak, do.	3/5/0	3/15/0
Canada	4/0/0	6/0/0
Pine, Canada red	0/0/0	0/0/0
Do. yellow	4/7/6	6/5/0
Lath, Dantsic, fath	4/10/0	5/10/0
St. Petersburg..	4/0/0	6/10/0
Wainscot, Riga, &c., log	3/15/0	5/15/0
Odessa, crown	3/15/0	5/15/0
Deals, Finland 2nd & 1st std 100	9/15/0	10/5/0
Do. 4th & 3rd	9/15/0	10/5/0
Do. Riga	8/5/0	9/5/0
St. Petersburg, 1st yellow	11/15/0	14/5/0
Do. 2nd yellow.	10/15/0	12/5/0
Do. white	9/15/0	11/15/0
Swedish	9/15/0	16/15/0
White Sea	10/15/0	18/c/0
Canada, Pine 1st	18/15/0	25/5/0
Do. do. 2nd	13/15/0	17/0/0
Do. do. 3rd, &c.	6/0/0	10/0/0
Do. Spruce, 1st	8/10/0	10/10/0
Do. do. 3rd and 2nd	7/5/0	8/10/0
New Brunswick	7/5/0	8/0/0
Battens all kinds	5/0/0	26/0/0
Flooring boards, sq., 1 in. prep. 1st	9.6	16/3
Do. 2nd	8/0	13/3
Other qualities—	6/3	7/0
Cedar, Cuba, ft.	/4	/4½
Honduras, &c.	/3½	/4½
Mahogany, Cuba	/5½	/7
St. Domingo, cargo av.	/5	0/1/3
Mexican, do. do.	/3½	/4
Tobasco, do. do.	/4	/6½
Honduras, do.	/4	/6
Box, Turkey, ton	4/0/0	15/0/0
Rose, Rio	7/0/0	14/0/0
Bahia	6/0 0	12/0/0
Satin St. Doming.	0/0/5	0/1/0

TIMBER *(continued).*

Satin, Porto Rico	0/0/9	0/1/0
Walnut, Italian	0/0/3	0/0/7

METALS.

Iron—Pig, in Scotland ....ton	2/8,8½	0/0/0
Bar, Welsh, in London	6/0/0	6/5/0
Do. do. at works in Wales	5/15/0	5/17/6
Do. Staffordshire, in London	6/5/0	7/10/0
COPPER—British cake and Ingot	59/10/0	60/0/0
Best selected	60/0/0	60/10/0
Sheets, strong	63/10/0	64/10/0
Chili bars	55/7/6	0/0/0
YELLOW METAL..lb.	5d.	5½d
LEAD—Pig Spanish ....ton	13/5 0	0/0/0
English com. bands	13/10/0	0/0/0
Sheet, English 6 lbs. per sq. ft. and upwards	14/10/0	0/0/0
Pipe	15/0/0	0/0/0
ZINC—English sheet....ton	28 0/0	0/0/0
Vieille Montagne	29/15/0	0/0/0
Spelter	24/0/0	24/5/0
TIN—Straits	81/16/3	0/0/0
Australian	82/5 0	82/15/0
English Ingots	84/10 0	85/10 0
Banca	0/0/0	0/0/0
Billiton	0/0/0	0/0/0

OILS.

Linseed ....ton	16/2/6	0/0/0
Cocoanut, Cochin	27/15/0	0/0/0
Do. Ceylon	24/10/0	0/0/0
Palm, Lagos	21/15/0	0/0/0
Rapeseed, English pale	22/10/0	0/0/0
Do. Brown	21/5/0	0/0/0
Cottonseed ref.	15/0/0	16/0/0
Oleine	17/0/0	18/0/0
Lubricating U.S.	0/5/3	0/7/6
Do. Black	0/5/0	0/6/6
TAR—Stockholm barrel	1/5/0	0/0/0
Archangel	0/18/0	0/0/0
Turpentine	29 5'0	0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* N.B.—We cannot publish Tenders unless authenticated by the name and address of the sender; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100 unless in some exceptional cases and for special reasons.]

ALNWICK.—For the erection of a cottage, South-road, for Mr. W. A. Rand. Mr. M. T. Wilson, architect, Alnwick:—

Masonry.

W. Weatherilt	£107 15	T. Atkinson	£89 0
C. Thompson & Son	91 10	J. Armstrong, Lesbury*	87 6

Joinery.

W. Forster & Son	£73 0 0	C. Nettleship	£57 17 5
W. Dixon	68 10 0	J. Short & Son, Alnwick*	55 0 0
W. J. Smith	60 12 6		
H. Archbold	57 18 0		

Plumbing.

J. Young	£14 18 10	Wilkin & Hickman, Alnwick*	£13 19

Slating.

Mrs. T. Wood	£30 10	J. Purdie, Alnwick*	£24 11

Plastering.

Mrs. T. Wood	£13 2 10		

Painting.

A. Robertson & Son	£5 9 6	J. Wallace, Alnwick*	£3 14 0
J. W. Kransgill	3 15 0		

* Accepted.

ALTRINCHAM.—Accepted for the construction of main sewers, &c., Hale, for the Bucklow Urban District Council. Mr. J. M. D. M'Kenzie, surveyor, 7, Market-street. Altrincham:—
Geo. Boyson, Ashton-on-Mersey £750

BAILDON (Yorks).—For the erection of a house, stabling, lodge, &c Messrs. Isitt, Adkin & Hill, architects, Prudential-buildings, Bradford:—

Masonry and Joinery.—W. Foss & Co., Gateland Works, Shipley	£6,124
Plumbing.—Slater & Son, Bond-street, Leeds	1,779
Slating.—J. Smithies, Great Horton-road, Bradford	245
Plastering.—F. Dean, Stott Hall, Clayton Heights, Bradford	£80
Painting (lodge and stabling only).—J. Hankins, Heidelburg-road, Manningham	18

BARNSLEY.—Accepted for the construction of streets, &c., ark-grove, for the Land Society. Messrs. Wade & Turner, surveyors, 10, Pitt-street Barnsley. Quantities by the surveyors:—

For 1, 2, *and* 3 *Sections.*

Henry Burrows & Sons, Barnsley £1,783 3 6

For 4, 5, 6, *and* 7 *Sections.*

Fred Walker, Park Grove Barnsley £138 19 2

BATLEY.—Accepted for paving, kerbing, &c., Grafton and other streets, for the Town Council. Mr O. J. Kirby, surveyor, Market-place, Batley. Quantities by surveyor:—

Brown's-street.

H. & W. Barraclough, Brighouse £320

Grafton-street.

H. & W. Barraclough, Brighouse £563

BELFAST.—For the construction of a covered concrete reservoir, Ballysillan. Mr. Acheson Ferguson, surveyor, 35, Royal-avenue, Belfast:—

W. J. Campbell & Son	£11,500	H. & J. Martin, Limited	£10,430
J. McKee & Sons	11,183	Henry Laverty & Sons, Cambridge-street,, Belfast*	10,400
J. & W. Stewart	10,943		
Wm. McLarnon	10,548		
Courtney & Co.	10,590		

* Accepted.

BROMSGROVE.—For the construction of sewers, Pedmore, for the Rural District Council. Mr. E. B. Marten, C.E., Church-street, Chambers, Stourbridge:—

Jacob Briggs	£4,310 0 0	Thos. Vale	£2,474 10 0
Geo. Trentham	2,551 4 0	W. L. Meredith	2,231 15 1
Geo. Law	2,482 0 0	John Mackay	1,994 14 0

BURY (Lancs).—For the erection of one pair of semi-detached villas, Manchester-road, Bury, for Mr. G. Howe. Mr. F. Smith, architect, 62, Market-street, Manchester. Quantities by architect:—
John Smith & Sons, Bury £1,570

CARDIFF.—For private street works at Canton, Mr. W Harpur C.E., Town Hall, Cardiff:—

	James Rich.	Elizabeth Osmond.	Charles Davies.	Thos. Rees.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Lansdowne-road:—				
Carriageway	123 10 3	120 17 9	134 3 9	135 6 3
Footway	228 10 6	229 17 1	228 6 5	232 0 1
	352 0 9	350 14 10*	362 10 2	367 6 4
Westmoreland-st.:—				
Carriageway	113 2 8	111 12 8	123 15 0	124 3 6
Footway	253 9 1	256 8 1	253 13 5	264 9 0
	366 11 9*	368 0 9	377 8 5	388 12 6
Cumberland-street:—				
Carriageway	113 5 10	111 15 10	123 18 6	124 7 0
Footway	254 7 4	257 19 2	254 2 1	264 18 9
	367 13 2*	369 15 0	378 0 7	389 5 9
Brunswick-street:—				
Carriageway	113 10 7	112 0 7	124 3 9	124 12 3
Footway	258 14 0	261 18 1	258 14 9	269 8 9
	372 4 7*	373 18 8	382 18 6	394 1 0
Hanover-street:—				
Carriageway	113 10 7	112 5 1	124 3 9	124 12 3
Footway	257 1 2	260 2 2	256 18 10	267 14 6
	370 11 9*	372 7 3	381 2 7	392 6 9
Alexandra-lane:—				
Carriageway	114 6 8	112 19 8	130 18 8	124 11 0
Footway	46 1 3	41 17 6	43 5 5	46 1 3
	160 7 11	154 17 2*	174 4 1	170 12 3

*Accepted.

CARDIFF.—For reconstruction of sewer and repairing footway in Cathys-terrace. Mr. W. Harpur, C.E., Town Hall, Cardiff:—

	Thomas Rees.	Frank Ashley.	James Rich.
Sewer	£510 15 0	£467 2 9	—
Footway	542 16 9	585 4 5	£520 2 1
Total	£1,053 11 9	£1,052 7 2*	

CASTLE DONINGTON (Leics.).—For the execution of sewerage works, for the Rural District Council. Mr. H. Walker, C.E., Newcastle Chambers, Angel-row, Nottingham. Quantities by engineer:—

Richd. Lomax	£9,377 16 1	A. B. Clarke	£6,350 0 0
Herbert Weldon	8,400 16 7	I. Hawley & Son	6,317 1 11
W. Meredith	6,965 6 2	J. F. Price	6,300 0 0
J. D. Nowell & Sons	6,720 1 0	W. & J. Foster	6,035 4 9
Walker & Slater	6,750 0 0	Main, Kendal, & Main	5,775 0 0
R. Holmes	6,750 0 0		
Cope & Raynor	6,700 0 0	J. H. Vickers, Ltd., Nottingham*	5,770 0 0
C. E. Cox & Son	6,485 16 3	M. Hall & Sons	5,621 11 5
H. H. Barry	6,400 0 0		

* Accepted.

COVERACK (Cornwall).—For erecting the "Headland Hotel," Mr. Sampson Hill, architect, Redruth:—

Cook	£2,399 0	Hodge & Mitchell	£2,840 0
Hill	3,322 0	W. J. Winn & Son	2,627 10
George & Son	3,317 0	Jno. Odgers, Redruth*	2,530 0
Pooley	2,884 0		

* Accepted.

DONINGTON (near Spalding).—For alterations and additions to Komani House, for Mr. W. Royce. Mr. Edward A. Jollye, architect, Donington:—

	Part 1.	Part 2.
S. Sherwin	£427 0 0	£796 0 0 .. £1,223 0 0
F. Pattinson, Ruskington	317 17 2*	822 17 9 .. 1,140 14 11

* Amended and accepted.

EASTRY (Kent).—For the execution of water-supply works, for the Rural District Council. Mr. F. S. Courtney (Easton and Anderson, Limited), engineer:—

A. Green	£1,840 0 0	Henry Shardlow	£1,537 0 0
Bostel, Sons & Peattie	1,800 0 0	A. T. Catley	1,466 0 0
Semark & Hudson	1,620 2 6	Jenkins & Son	1,347 7 0
S. White & Son	1,599 0 0	F. V. Bond, Ramsgate*	1,295 0 0

* Accepted.

HARROGATE.—Accepted for laying two and a half miles of surface water drains, for the Corporation. Mr. S. Stead, Borough Surveyor, Municipal Offices, Harrogate:—
J. L. Hampton-Matthews, Kent-road, Harrogate £5,623 9 10

ILKLEY.—Accepted for the supply of 1,000 tons broken granite, for the Urban District Council:—
Leonard Cooper, Leeds, 8s. 10d. per ton, delivered at Ilkley Station.

LEEDS.—For laying sewers, &c., Old Park and other roads, for the Corporation. Mr E. J. Silcock, C.E., 10, Park-row, Leeds:—

Henry Wilson	£2,170 7 9	J. Simpson	£2,052 10 0
J. Scholefield, Sons & Co.	2,759 8 4	M. Hall & Sons	1,371 14 0
A. Brunton & Sons	2,055 2 0	John Keighley	1,215 8 7

LONDON.—For the separate items required in connexion with the erection of working-class dwellings on the Borough-road site, for the London County Council:—

General Works.

W. Johnson & Co., Lim.	£18,791	W. Downs	£18,178
Foster & Dicksee	18,764	Holloway Bros.	17,918
E. Lawrance & Sons	18,528	T. Gregory & Co.	17,473
H. L. Holloway	18,400	J. Brown, Son, & Blomfield	17,400
Killby & Gayford	18,280		
J. Chessum & Sons	18,255		

Foundations.

H. Cattermole & Sons	£2,565 16 6	C. Gude & Son	£2,262 14 0
J. C. Base	2,393 16 3	N. Fortescue	1,923 0 0

Granolithic Work.

J. Bickley	£810 2 5	W. H. Lascelles & Co.	£770 0 0
B. Ward & Co.	780 10 5		

Chimney Pieces.

Yates, Haywood, & Co	£498 10	Carron & Co. (portion only)	£138 0

Iron Railings.

W. T. Allen & Co.	£825 0	Yates, Haywood, & Co.	£560 5

Tiling Work.

A. J. Tatham	£652 7 3

Wash Tubs.

B. Finch & Co.	£375 18	Shanks & Co.	£227 17
Doulton & Co.	315 0		

Fireproof Floors.

Bank's Fireproof Construction Syndicate, Ltd.	£2,303	Homan & Rodgers	£1,456

Dormers.

F. Braby & Co., Ltd.	£150	Ewart & Son	£111 3 4

LONDON.—For repairs and decorations at No. 2, Upper Berkeley-street, W.:—

Kelland	£549 0	Spiers & Son	£450 0
Cannon	525 0	R. S. Buckeridge*	443 10

* Accepted.

LONDON.—Accepted for repairs and decorations at No. 13, Seymour-street, W.:—
R. S. Buckeridge £678

LONDON.—For alterations, &c., at No. 12, Osborn-street, Whitechapel, E., for the Victoria Wine Company. Mr. George Waymouth, architect, 23, Moorgate-street, E.C.:—

W. Gladding	£395	F. W. Horey (accepted)	£272
Barlow & Roberts	271		

LONDON.—For fitting up temporary floors and platforms in the first and second-class swimming-baths at the Public Baths, Hoxton, for the committee of the Shoreditch Vestry. Messrs. Spalding & Cross and Mr. H. T. Hare, architects:—

	First-class Bath.	Second-class Bath.
Thomason	£614	£260
Lapthorne	571	254
E. Houghton & Son	542	240
Dolman	518	237
Walter Lawrence	519	235
Gray Hill	490	210
General Builders, Ltd.	443	190

LONDON.—For the formation of a road, &c., Bruce-grove, Tottenham. Messrs. Tuckett & Son, surveyors, 2, Basinghall-street, London, E.C.:—

W. Neave & Son	£2,800 0	W. Swaker	£2,467 0
S. Kavanagh	2,705 0	B. Nowell & Co.	2,467 0
E. Wilson	2,620 0	M. S. Ritteringham	2,465 0
A. J. Catley	2,596 0	Thos. Adams	2,463 0
C. W. Killingback & Co.	2,580 0	R. Ballard	2,425 0
		E. Rogers & Co.	2,397 0
J. A. Dunmore	2,575 15	E. T. Bloomfie'd	2,200 0
Clift Ford	2,500 0	Grounds & Newton	2,050 0

LONDON.—For alterations and additions to Messrs. Glover's van works, Half Moon-crescent, Caledonian-road, N. Mr. George Waymouth, architect, 23, Moorgate-street, E.C.:—

Mattock Bros.	£1,320	Bristow & Sons (accepted)	£1,097
Stevens Bros.	1,230		

LEVENSHULME.—For sewering, &c., several streets and passages, for the Urban District Council. Mr. J. Jepson, surveyor, Guardian-chambers, Tiviot Dale, Stockport:—

Rowlands	£2,392 1 10	Worthington & Pownall, Manchester*	£2,230 19 8
Briscoe & Sons	2,381 6 7		
Geo. Boden	2,284 19 4		

* Accepted.

NANTYDERRY.—For alterations and additions to Nantyderry House, near Abergavenny, for the Misses Evans. Mr. Edgar G. C. Down, architect, City Chambers, Queen-street, Cardiff:—

I. Linton	£1,338 0	S. Shepton & Son	£1,199 16
W. Thomas & Co.	1,247 0	Jones Bros., Cardiff*	1,150 0

* Accepted.

ORPINGTON.—For the erection of six cottages at Crofton Orpington, Kent. Mr. St. Pierre Harris, architect and surveyor, 8, Ironmonger-lane, E.C., and Orpington:—

Smith & Son	£2,122	W. Owen	£1,992
T. Knight	2,099	Stebbings & Pannett	1,839

PONTYPRIDD.—For the erection of a chapel, &c., Clydach Vale, for the Welsh Independents. Mr. Frank B. Smith, architect, Port Talbot:—

Hunt & Co.	£3,890 0 0	Spratt Bros.	£2,850 0 0
Griffiths & Co.	3,395 0 0	T. P. Stephens, Swansea*	2,647 6 10
Charles Bros.	2,980 0 0		

* Accepted conditionally.

SHERBURN (Durham).—For the construction of sewers, &c., for the Rural District Council. Mr. G. Gregson, surveyor, "Hastwood," Western Hill, Durham. Quantities by the surveyor:—

G. T. Manners	£247	R. Oliver	£185
F. C. Dixon	186	H. Nicholson, Sherburn*	167

* Accepted.

SLEAFORD (Lincs.).—For the execution of water supply works, Great Hale, for the Rural District Council. Mr. Jesse Clare, C.E., Sleaford. Quantities supplied by the engineer:—

Merredew & Wort	£1,417 0 0	J. Lees	£672 16 9
A. Jenkins	795 0 0	Stevenson & Co.	668 5 0
W. Stone	739 8 7	H. Roberts	642 3 7
Jenkins & Son	722 9 8	J. T. Barnes	638 0 0
H. Shardlow	700 0 0	S. C. Skinner, Everby, Sleaford (accepted)	635 0 0
H. J. Masterface	692 4 10		

STALYBRIDGE.—For the erection of the "Church Inn," Millbrook, for Messrs. Swales Brewery Company, Limited, Manchester. Messrs. Eaton, Sons, & Cantrell, architects, Stamford-street; Ashton-under-Lyne:—

All Trades except Plumbing.

Garside, Barnes, & Co, Stalybridge £3,570

Plumbing and Glazing.

G. H. Coop, Ashton-under-Lyne 249

STOURBRIDGE.—For the construction of an outfall sewer, for the Stourbridge Main Drainage Board. Mr. W. Fiddian, Surveyor, Town Hall Offices, Stourbridge:—

J. Biggs	£787 5 1	T. Vale	£545 0 0
G. Trentham	650 0 0	G. Law	528 0 3
W. L. Meredith	560 0 2	J. Mackay, Hereford*	471 14 11

* Accepted.

WAKEFIELD.—For main drainage work, for the Wakefield Rural District Council. Mr. Frank Massie, engineer:—

	C. Alverthorpe drainage. Contract No. 7.	A. Outwood and Stanley joint drainage. Contract No. 13.	B. Outwood drainage. Contract No. 14.
J. Armitage	£68 15 6	£761 11 6	£375 17 0
M. Arundel, East Ardsley	69 15 0*	733 19 9	361 10 0
W. Doleman, Dewsbury	78 4 11	887 5 1*	345 1 6
Flower Bros.	114 5 0	837 18 2	432 16 0
M. Hall & Son	65 2 6	710 1 0	308 6 3
J. Keighley	—	804 18 9	418 2 3
T. & G. Wilson, Wakefield	65 18 4	687 15 0	348 2 1*

* Accepted.

Messrs. T. & G. Wilson's tender for the building of a retaining wall at Alverthorpe has been accepted. The amount is £131 7s.

WALTON-ON-THE-NAZE.—For the execution of road works for the executors of the late Mr. R. Warner. Mr. T. H. Nixon, surveyor, 5, Lessar-avenue, Clapham Common, S.W. Quantities by the surveyor:—

B. W. Glenny	£2,507 1 9	J. Moran & Son	£1,925 0 0
Geo. Double	2,516 0 0	Hector Stone	1,899 9 6
H. J. Linzell	2,489 0 0	D. Mackenzie & Son, Clacton-on-sea*	1,795 0 0
F. Bedford Pitcher	2,075 0 0		

* Accepted.

WEDNESBURY.—Accepted for widening bridge over Birmingham Canal, Moxley, for the Corporation. Mr. E. M. Scott, Borough Surveyor, Town Hall, Wednesbury:—
John Mackay, Smethwick £537

LONDON SCHOOL BOARD TENDERS

At the last meeting of the London School Board, the Works Committee submitted the following lists of tenders:—

EAST-LANE.—Old portion.—Cleaning interior:—

Holliday & Greenwood	£240 0 0	W. Brown	£192 10 0
A. White & Co.	219 0 0	W. Banks	187 11 6
Johnson & Co.	210 0 0	E. Triggs†	170 0 0

GILLESPIE-ROAD.—Providing halls for boys, girls, and infants; re-seating and re-lighting class-rooms in existing school; boys' staircase; providing cloak-rooms for all departments; removing and refixing girls' and infants' existing covered playground; providing teachers' room for infants, and new drawing class-room. Revised accommodation:—Boys, 368; girls, 368; infants, 464; total, 1,202:—

Willmott & Sons	£8,327	McCormick & Sons	£7,697
Staines & Son	8,292	J. Grover & Son	7,818
F. Gough & Co.	8,084	C. Cox	7,654
W. Shurmur	7,985	E. Lawrance & Sons	7,521
G. S. S. Williams & Son	7,984	R. A. Yerbury & Sons	7,472
W. Whiteley	7,950	L. H. & R. Roberts*	7,168
W. Scrivener & Co.	7,940		

(i.) GORDON HOUSE (Isleworth).—Gravelling roadways and paths:—

D. Bigg	£110 0	C. Little	£72 0
Speechley & Smith	78 0	H. Moyse*	68 10
S. N. Soole & Son	75 0		

(ii.) Supplying and delivering paper compass points on a running contract:—

	For 1,000 sets.	For 2,000 sets.	For 3,000 sets.	For 5,000 sets.
Henderson & Spalding	—	—	£35 0 0	—
W. Clowes & Sons, Ltd.	—	—	28 12 0	—
Standidge & Co., Ltd.	—	—	28 5 0	—
Vincent Brooks, Day, & Son, Ltd.	£8 11 0	—	—	—
McCorquodale & Co., Ltd.	—	—	23 15 0	—
Alexander & Shepheard*	9 0 0	£14 15 0	20 0 0	£30 10 0

LARKHALL-LANE.—Painting exterior and cleaning interior —

Holloway Bros.	£275 0	E. Triggs	£222 0
R. S. Ronald	274 0	Rice & Son	195 0
T. Gregory & Co.	260 0	J. Garrett & Son	186 0
Maxwell Bros., Limited	255 0	E. B. Tucker†	184 15

OLGA-STREET.—Improvements — revised accommodation:—boys, unaltered; girls, unaltered; infants, 572; net gain of six infant places. The plans include providing new halls for boys and girls, adapting existing class-rooms for infants' hall, seven new class-rooms for infants; improving, seating and lighting of class-rooms in graded school; and new corridors, staircases and teachers' rooms; new stock-rooms, cloak-rooms, lavatories and water-closets for all departments; also alterations to existing infants' cloak-rooms and lavatories, new girls' and infants' entrance in Arbery-road, new infants' entrance in Olga-street; removing existing and providing new girls' and infants' covered playground under boys' class-rooms; additional covered playground for boys under new hails; removing existing division walls in boys' and girls' playgrounds; new heating apparatus; new drainage scheme, and enclosing and tar-paving the additional land:—

J. Longley & Co.	£20,985	G. S. S. Williams & Son	£19,830
Kirk & Randall	20,083	F. & F. J. Wood	19,656
W. Shurmur	20,846	C. Cox	18,977
J. Chessum & Sons	20,374	J. & M. Patrick	18,957
E. Lawrance & Sons	20,155	C. Miskin & Sons*	18,245

RISINGHILL-STREET.—Old School.—Providing and fixing larger boiler, providing additional heating surface in three class-rooms in each department and also in lavatories. Enlargement—Providing auxiliary heating in two class-rooms in each department, also in corridors, cloak-rooms, and lavatories:—

J. Esson	£375 0	G. Davis	£335 0
J. Grundy	366 0	J. & F. May	330 0
J. Wontner-Smith, Gray & Co.	360 0	W. G. Cannon & Sons	329 0
Dargue, Griffiths & Co., Limited	355 13	Bates & Pearce*	275 10
		J. Detries & Sons, Ltd.	246 0

ST. JUDE'S, COMMERCIAL-STREET.—Painting exterior and cleaning interior:—

Johnson & Co.	£257 0	A. W. Derby	£205 10
J. F. Holliday	235 0	G. Wales	191 18
J. Haydon	227 0	G. Barker	188 0
J. Kybett	223 0	W. Brown†	184 10
W. Bunce	212 0		

THE "LATCHMERE."—(J. M. School.)—Cleaninginterior:—

R. S. Ronald	£150 0	B. E. Nightingale	£56 0
O. Craske	81 0	E. B. Tucker†	49 11

"THE SLADE."—Improvements—Providing halls for all departments, new infants entrance, re-lighting end class-rooms of boys' girls', and infants' departments:—

Johnson & Co.	£4,300	J. & C. Bowyer	£3,645
A. White & Co.	4,167	W. Johnson & Co., Ltd.	3,597
Edwards & Medway	3,835	E. Triggs	3,511
F. & H. F. Higgs	3,732	J. Garrett & Son*	3,349
Kirk & Randall	3,695		

THE "WHITTINGTON."—Altering positions of two partitions, providing stepped flooring, Kindergarten gallery, &c, and cleaning interior of school:—

G. Chase & Son	£1,043 5	Stevens Bros.	£431 10
W. Hornett	520 0	F. T. Chinchen	403 0
T. Cruwys	479 0	Marchant & Hirst†	385 0
E. Triggs	454 0		

WESTBOURNE-ROAD.—Providing and fixing auxiliary mains and additional radiating coils:—

J. & F. May	£125 0 0	J. Grundy	£85 2 6
G. Davis	120 0 0	J. C. Christie	84 10 0
W. G. Cannon & Sons	120 0 0	Duffield & Co.*	80 0 0
E. Oldroyd & Co., Ltd.	95 0 0		

WIRTEMBERG-STREET.—Cleaning interior:—

W. Johnson & Co., Ltd.	£188 9	Holloway Bros.	£135 0
Maxwell Bros., Ltd.	181 0	Rice & Son	115 0
H. & G. Mallett	144 0	E. Triggs†	109 0

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T. Cruwys	25 0 0	—
Foster, Cooper, & Foster	23 10 0	—
J. Garvie & Sons	*14 17 0	*6 18 0
G. M. Hammer & Co., Ltd.	21 10 0	11 8 0
W. H. Lascelles & Co	20 18 0	8 12 0
London School Furniture Co.	—	10 4 0
J. H. W. Martin	19 10 0	—
Pearson & Brown	19 12 6	—
E. Spencer & Co.	21 19 0	—

Bowls.

Jukes Coulson, Stokes, & Co., 15s. per doz.
Carter & Aynsley, 13s. per doz.
*S. Parkes & Co., 5s. 9½d. per doz.

* Recommended for acceptance.
† Accepted.

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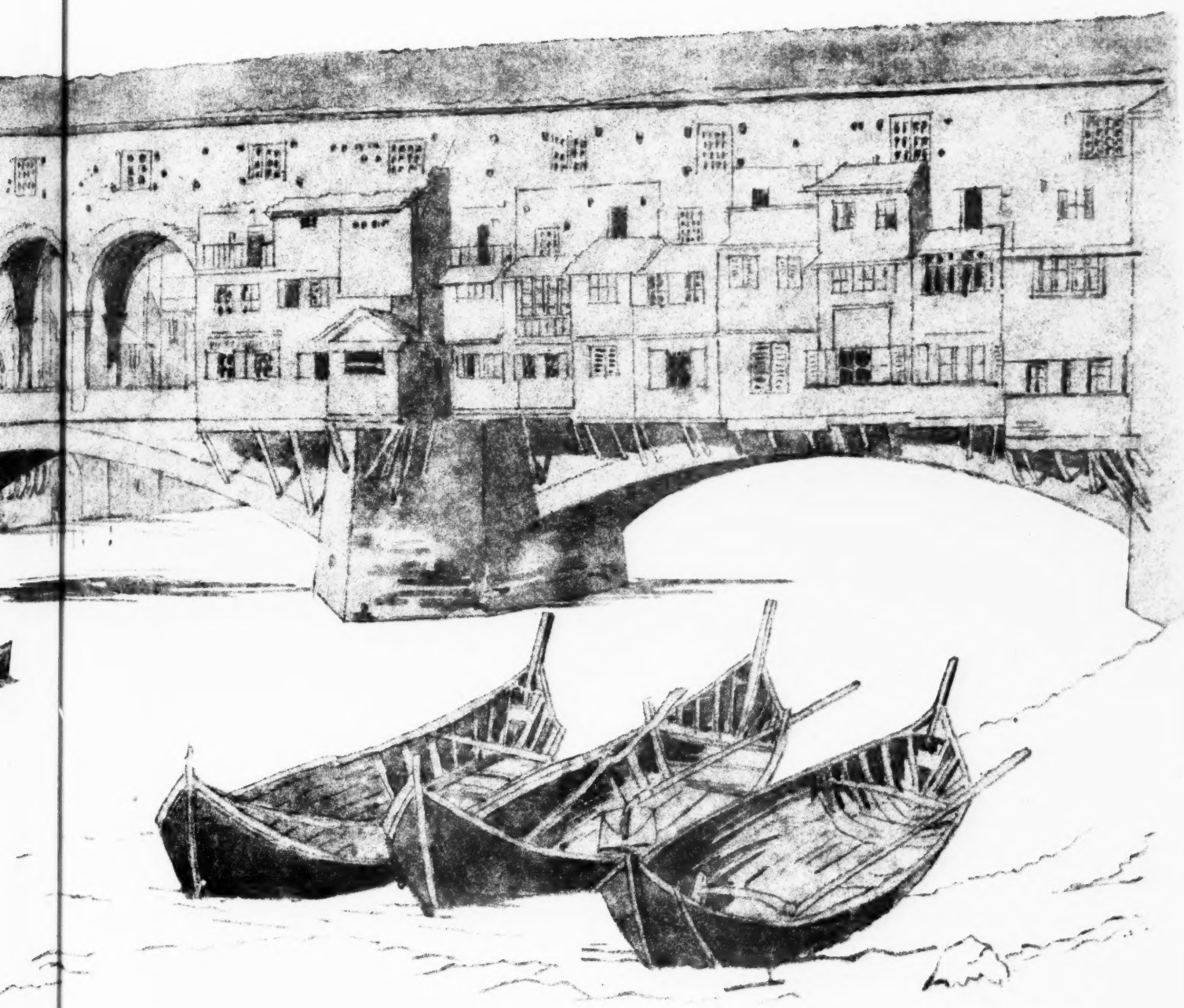

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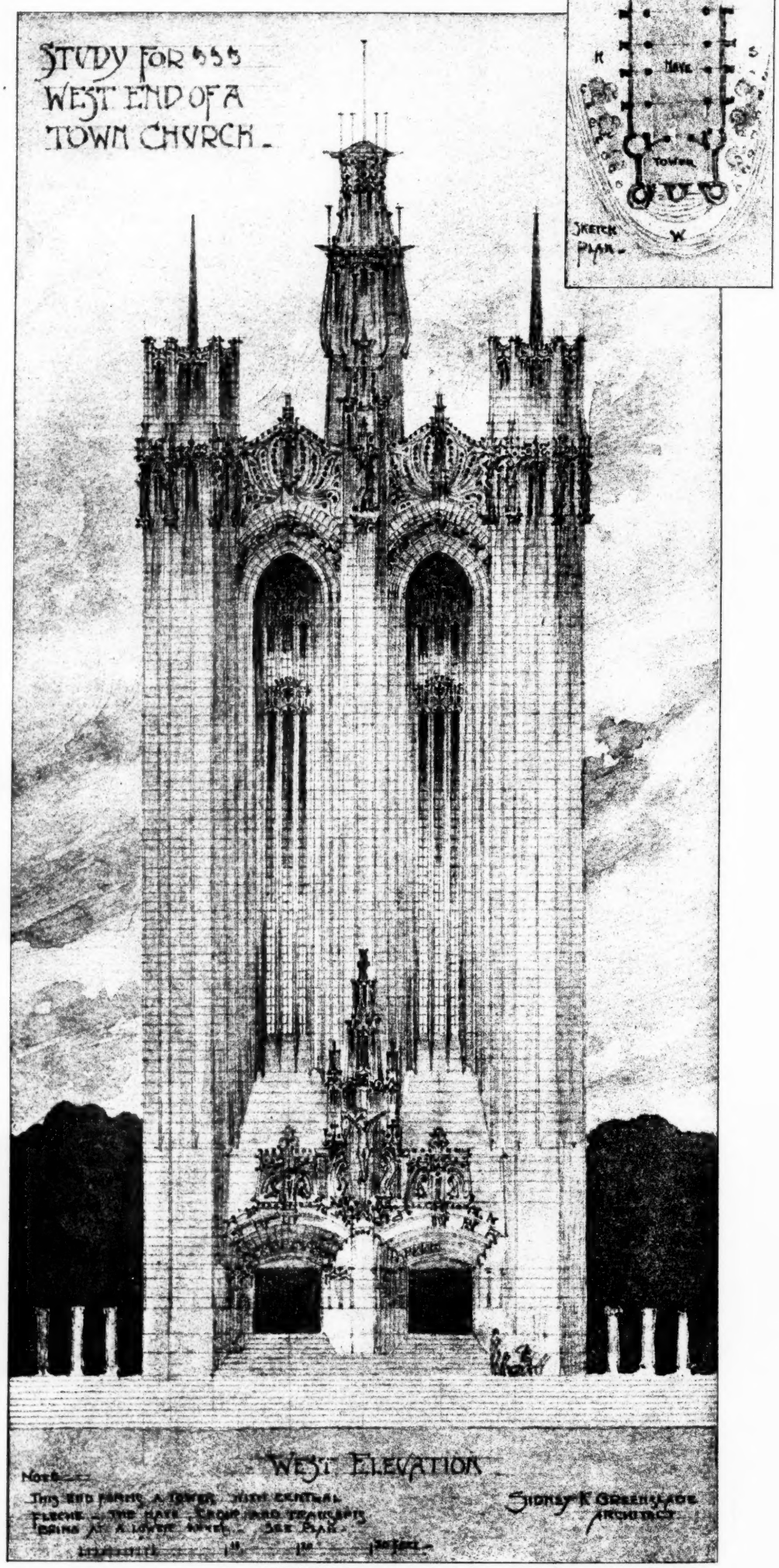

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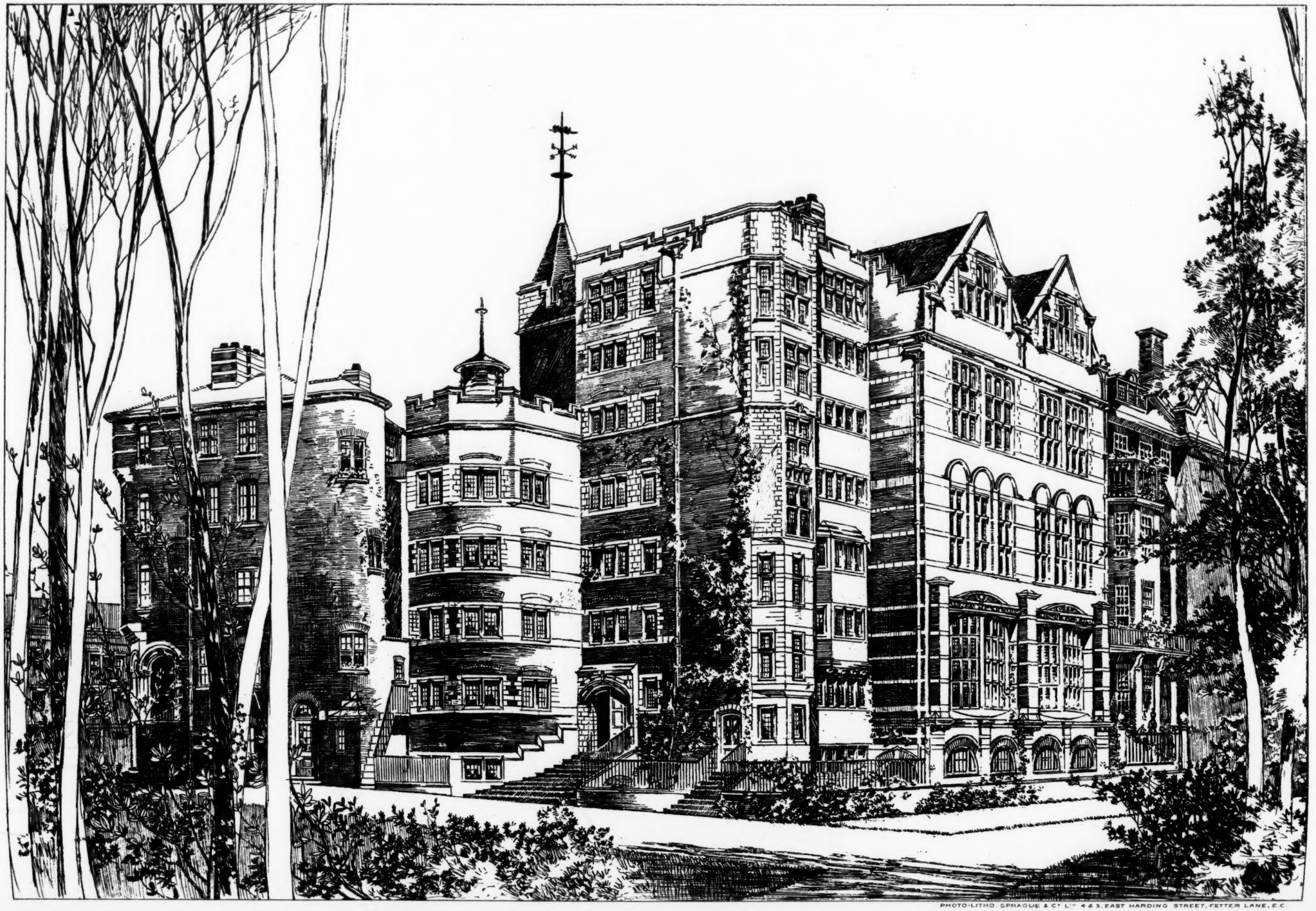

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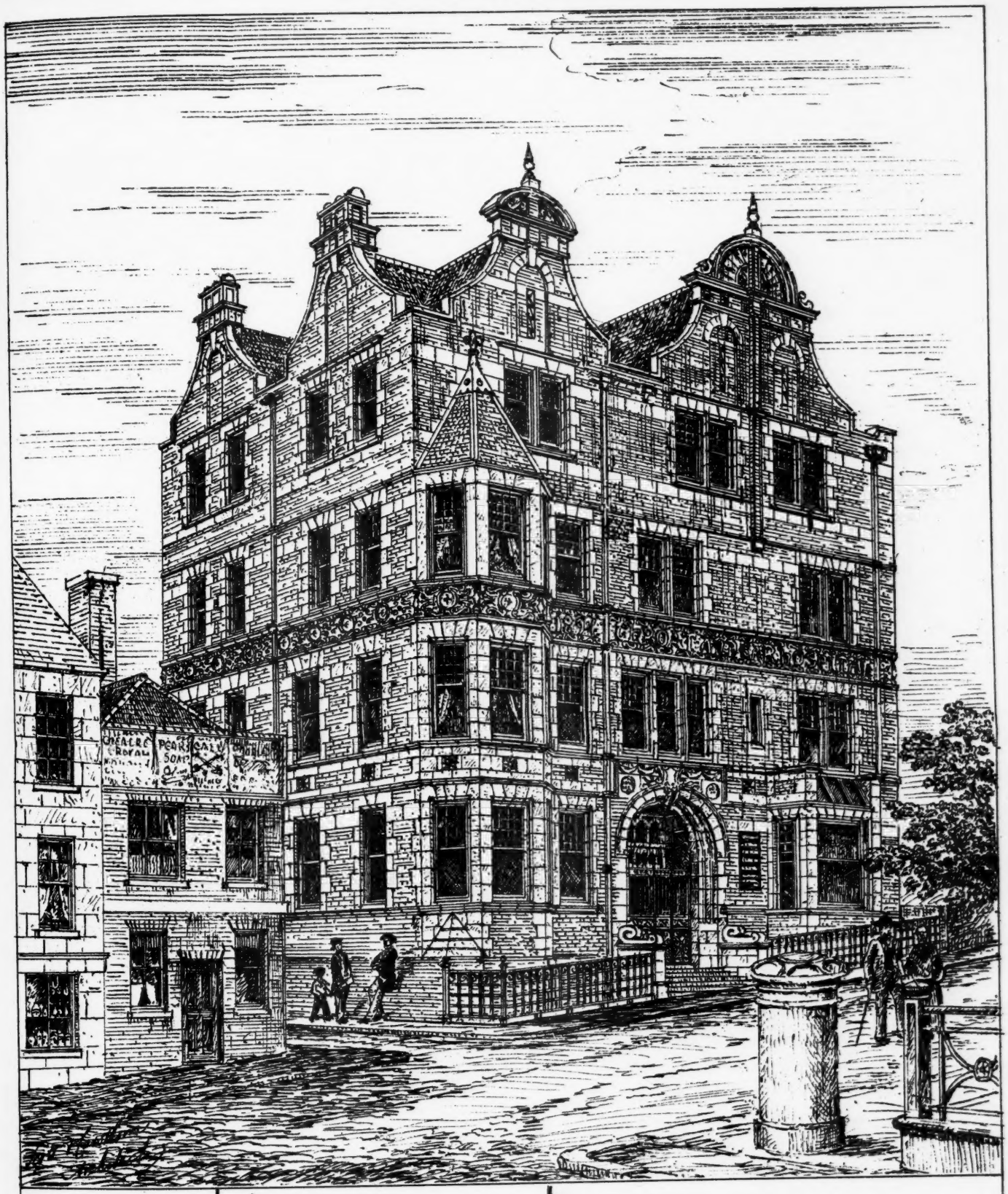

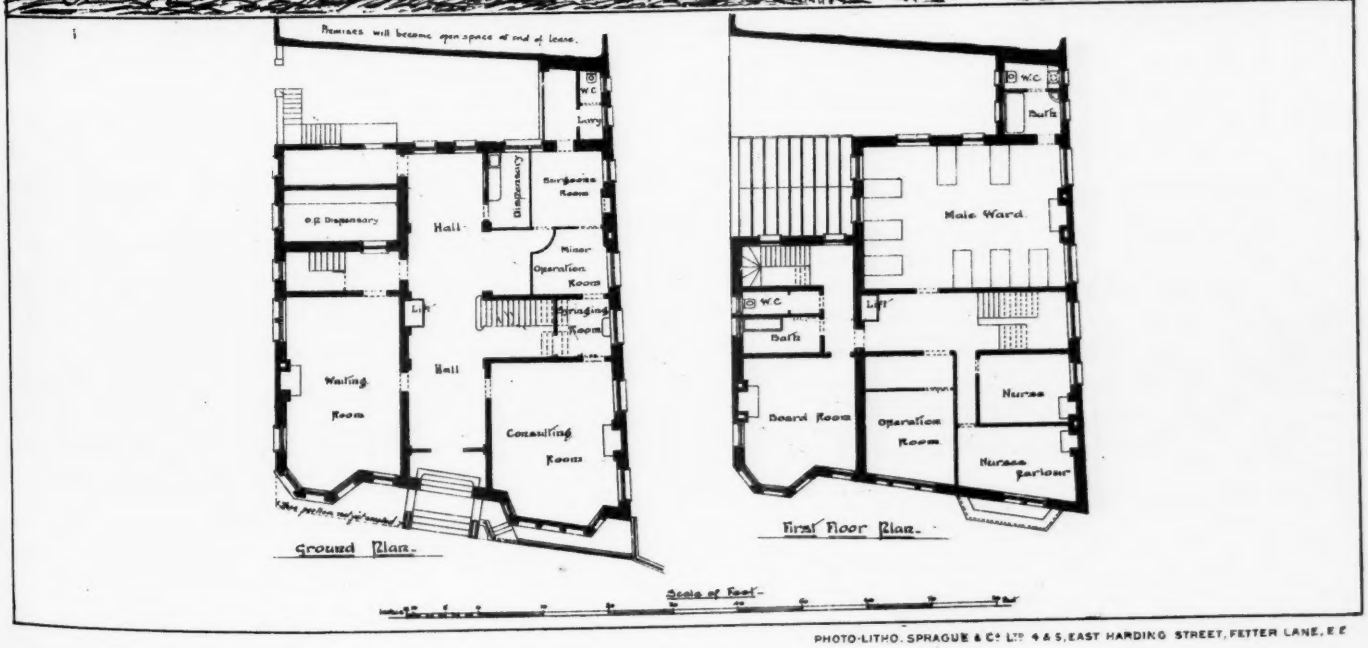

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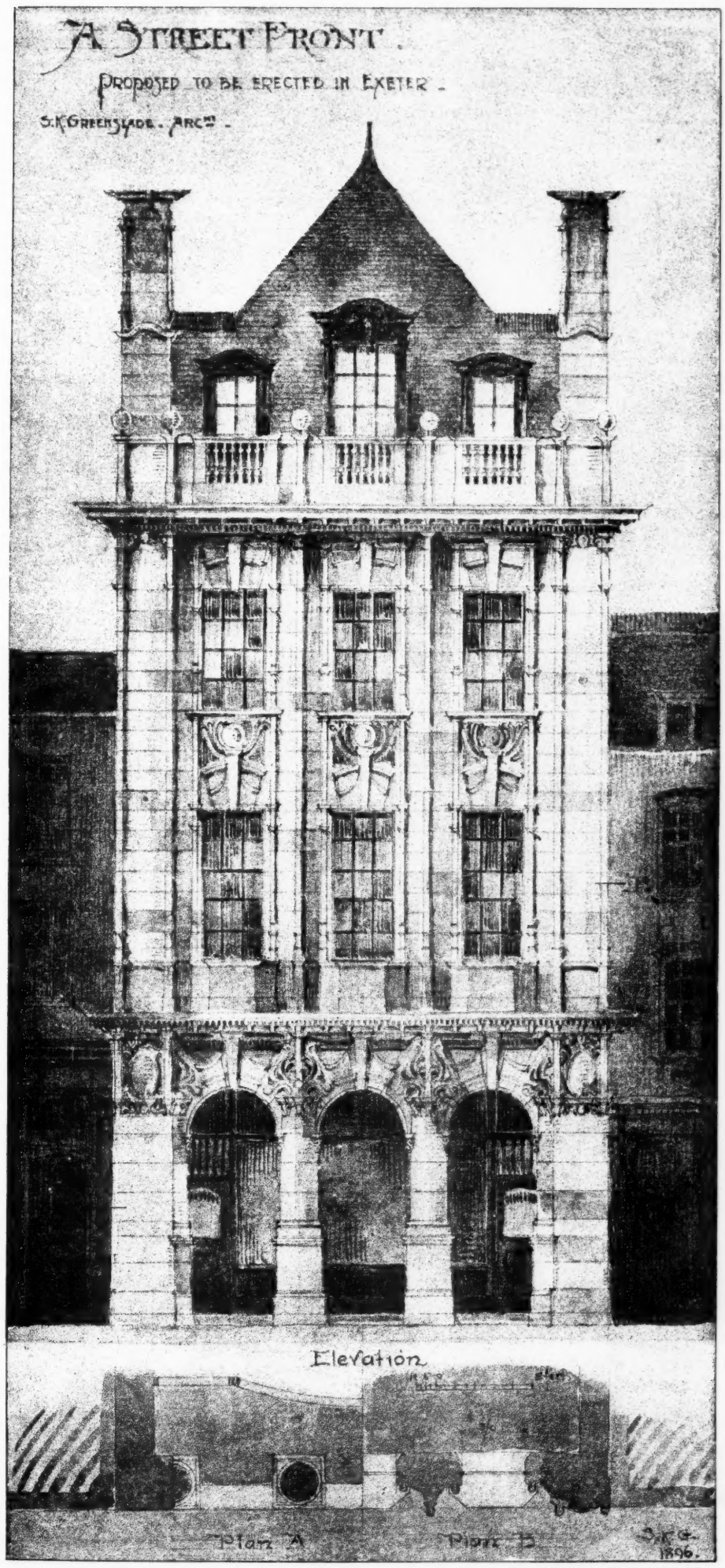

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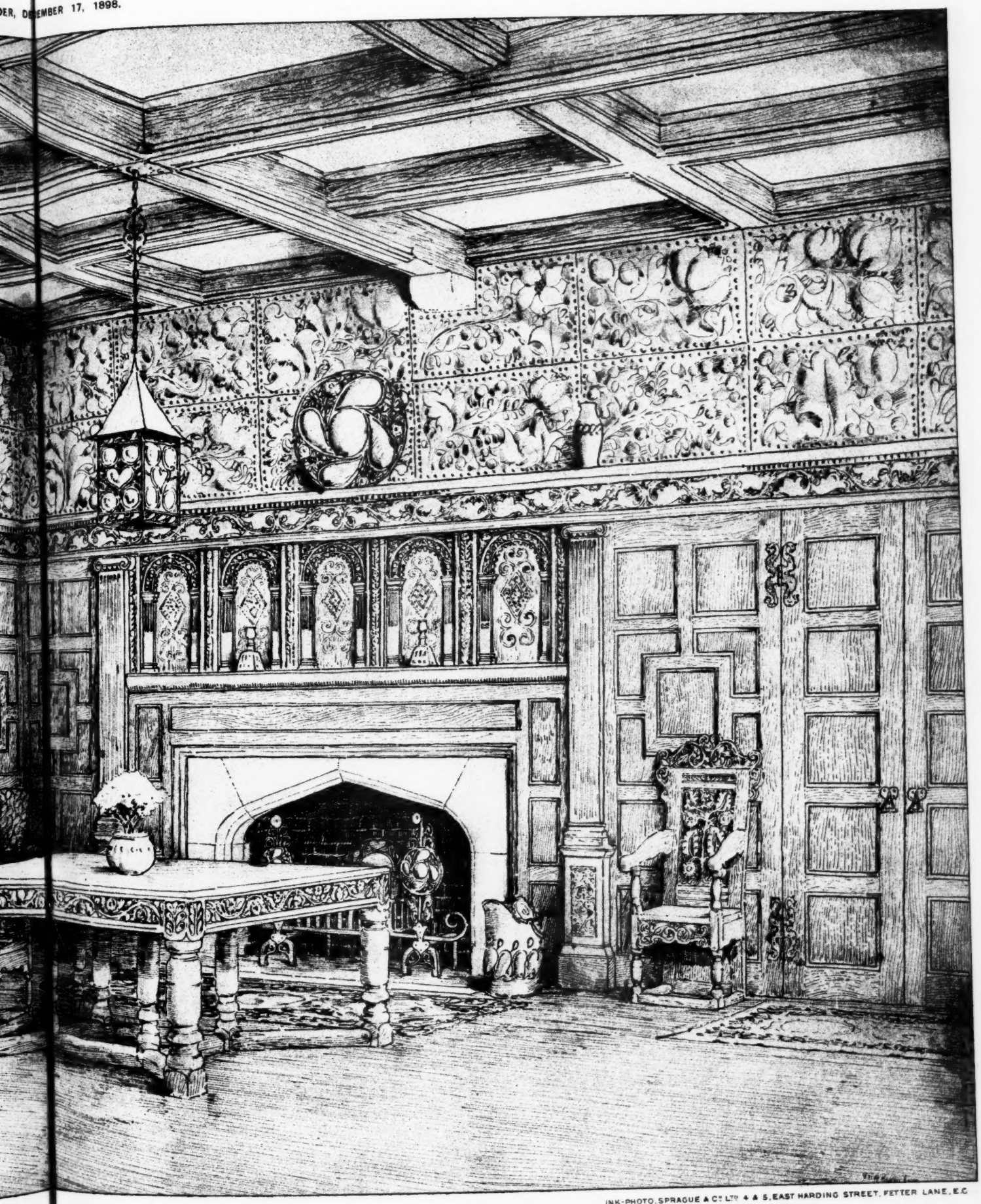

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